

**DRAFT**

**PRELIMINARY UPLAND ASSESSMENT REPORT  
McCONKEY/SESKO SITE  
1725 PENNSYLVANIA AVENUE  
BREMERTON, WASHINGTON**

**SEPTEMBER 20, 2007**

**FOR  
CITY OF BREMERTON**

September 20, 2007

City of Bremerton  
Department of Public Works  
3027 Olympus Drive  
Bremerton, WA 98130

Attention: Mr. Dan Miller

GeoEngineers is pleased to submit two copies of our "Preliminary Upland Assessment Report, McConkey/Sesko Site, Bremerton, Washington." Our services were completed in general accordance with our services agreement dated December 20, 2006 (amended on May 29, 2007).

We appreciate the opportunity to assist you on this project. Please contact us if you have questions regarding this report.

Yours very truly,

GeoEngineers, Inc.

Sean P. Trimble, LG  
Senior Project Manager

David A. Cook, LG, RBP  
Principal

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**Attachments**

cc. Joanne LaBaw, U.S. Environmental Protection Agency – Region 10  
Washington State Department of Ecology Voluntary Cleanup Program

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**PRELIMINARY UPLAND ASSESSMENT REPORT  
McCONKEY/SESKO BROWNFIELD SITE  
BREMERTON, WASHINGTON**

**File No. 00892-017-00**

**September 20, 2007**

**Prepared for:**

**City of Bremerton  
Department of Public Works  
3027 Olympus Drive  
Bremerton, Washington 98130**

**Attention: Dan Miller**

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**PRELIMINARY UPLAND ASSESSMENT REPORT  
McCONKEY/SESKO BROWNFIELD SITE  
BREMERTON, WASHINGTON**

## **1.0 INTRODUCTION**

This report summarizes the results of the Preliminary Upland Assessment conducted at the McConkey/Sesko Site (herein referred to as the “Site”) located at 1725 Pennsylvania Avenue in Bremerton, Kitsap County, Washington. The location of the Site relative to surrounding physical features is shown on Figure 1. The general layout of the Site is shown on Figure 2. Additional Site information, including ownership and history, is presented in Section 3.0 of this report.

The Washington Department of Ecology (“Ecology”) has given the Site a priority ranking of "1" using the Washington Ranking Method (WARM), indicating the greatest assessed risk of potential impacts to public health and the environment. We understand the City of Bremerton and one or more of the current Site owners are considering cleanup and redevelopment of the Site.

The City of Bremerton was the recipient of an EPA Brownfields Assessment Grant (EPA Project No. BF-9604651-0) for this Site in 2006. EPA has also offered to conduct a Targeted Brownfields Assessment (TBA) at the Site. Based on earlier meetings between the City, EPA, the property owners and other stakeholders, it was decided that the best way to maximize the EPA assessment grant and TBA was for GeoEngineers to complete a preliminary assessment at areas of highest concern, including groundwater. The EPA will then complete the TBA focusing on delineating soil and groundwater contamination identified in the upland portion of the Site. It is then planned that GeoEngineers will prepare a Remedial Investigation/Feasibility Study (RI/FS) based on the results of the preliminary and TBA results.

It is our understanding that the City of Bremerton and the property owners intend to enter this Site into Ecology’s Voluntary Cleanup Program (VCP). Ecology will be the lead regulatory agency and will review and comment on documents and will provide technical support, and ultimately, an opinion through the Voluntary Cleanup Program.

## **2.0 SCOPE OF SERVICES**

The primary objective of our proposed scope of work was to assess soil and shallow groundwater quality in potential contaminant source areas that have been identified in previous studies. A description of the field methods and detailed sampling protocol is included in Appendix A.

GeoEngineers completed the following specific scope of services for the preliminary soil and groundwater assessment:

1. Prepared a site-specific health and safety plan, which was used by GeoEngineers personnel during activities conducted at the site.
2. Conducted a site visit to mark proposed exploration locations.
3. Arranged for utilities to be located in the vicinity of the proposed explorations by public and private locating services.
4. Monitored the completion of eight soil explorations to depths down to 45 feet below ground surface (bgs), refusal or five feet below the initial water table, whichever occurred first. The eight soil

explorations were advanced using a truck-mounted hollow-stem auger (HSA) drilling rig, and were converted into permanent 2-inch diameter polyvinyl chloride (PVC) groundwater monitoring wells.

5. Collected soil samples from each of the soil boring explorations and screened soil samples for evidence of impact by hazardous substances using visual, headspace vapor, and water sheen screening methods.
6. Submitted selected soil and groundwater samples for laboratory analysis of:
  - Gasoline- and diesel-range petroleum hydrocarbons by Methods NWTPH-Gx and NWTPH-Dx (with silica gel cleanup);
  - Volatile organic compounds (VOCs) by EPA Method 5035/8260B;
  - Semivolatile organic compounds (SVOCs) by EPA Method 8270 SIM;
  - Polychlorinated biphenyls (PCBs) by EPA Method 8082; and
  - Priority pollutant list (PPL) metals and chromium VI by EPA 6000/7000 series methods and tributyltin (TBT) by Krone (GC/MS).
7. Evaluated chemical analytical results relative to Ecology's Model Toxics Control Act (MTCA) Method A or Method B cleanup levels.

Please note that due to the current zoning, and based on our understanding of the future Site use (as a possible marina and boat maintenance facility) it is likely that other cleanup levels may be applicable for this Site. Appropriate cleanup levels will be developed as part of the RI/FS process. For the purpose of this report, we have elected to reference MTCA Method A and Method B cleanup levels for comparative purposes only. The actual cleanup levels that are determined to be protective of human health and the environment could be greater than or less than the cleanup levels referenced in this report.

### 3.0 SITE CONDITIONS

#### 3.1 GENERAL

The Site is comprised of tax parcel numbers 3711-000-001-0409 and 3711-000-001-0607 (McConkey parcels) and tax parcel number 3711-000-022-0101 (Sesko parcel). The Site is located at 1725 Pennsylvania Avenue approximately one mile north-northwest of downtown Bremerton and immediately south of Port Washington Narrows in Bremerton, Kitsap County, Washington. The Site is bounded by Thompson Drive to the west, Pennsylvania Avenue and residential properties to the east, the Port Washington Narrows waterway to the north, and a third McConkey-owned parcel to the south.

The three tax parcels total approximately 3.7 acres. Two of the parcels are currently owned by Paul and Margaret McConkey. The third parcel is currently owned by Natacha Sesko. The City of Bremerton has an easement for the City's storm drain within the Site boundary and a Right-of Way adjacent to the east of the Sesko parcel. Several warehouse structures are present on the Site, which is currently used for light industrial purposes and storage of various materials, including boat parts and metal debris. According to the November 10, 2006 Phase I Environmental Site Assessments (ESAs) prepared by TechLaw, Inc. for the Site, each of the tax parcels is zoned as "Marine Industrial."

The available historical information indicates the Site has an extensive history of industrial use. The most notable historical industrial occupants include a coal gasification plant, petroleum bulk storage and distribution plant, sheet metal fabricator, drum storage facilities, boat and vehicle repair facilities, sandblasting and painting operation, and salvage yard. A concrete manufacturing plant was formerly located off-Site to the south. A petroleum bulk storage facility (SC Fuels) currently is located adjacent to the east of

the north portion of the Site, and a former petroleum bulk storage facility (ARCO) is located west of the north portion of the Site.

GeoEngineers completed preliminary site characterization activities to evaluate soil and groundwater conditions beneath the property.

## **3.2 SUBSURFACE CONDITIONS AND CHEMICAL ANALYTICAL RESULTS**

### **3.2.1 General**

GeoEngineers monitored the completion of eight groundwater monitoring wells (MW-1 through MW-8) between May 21, and May 24, 2007. The soil borings/monitoring wells were advanced to depths ranging from 20 to 45 feet bgs. The approximate boring locations are shown on Figure 2. Details of the field exploration program, and logs for the borings are presented in Appendix A.

Field screening was performed on soil samples obtained from the borings. A description of the field methods is included in Appendix A. Field screening results are presented in the boring logs.

### **3.2.2 Soil**

Soil samples were collected at five-foot intervals in each boring and observed to document soil lithology, color, moisture content, and field-screened for physical evidence of contamination. The general soil lithology encountered during soil boring completion consisted of silty sand and sandy silt fill overlying silty sand and glacial till with variable gravel. The fill layer was present across the Site and varied from approximately 5 to 15 feet thick.

As described in Appendix A, a minimum of two soil samples collected from each soil boring location were submitted for chemical analysis. Soil sample depths were selected based on field screening evidence. Selected soil samples obtained from the borings were submitted to TestAmerica Laboratory in Bothell, Washington for chemical analysis.

Gasoline-, diesel-, and oil-range hydrocarbons and/or VOCs were reported in the soil samples tested from each of the eight soil borings completed at the Site. The gasoline- and diesel-range hydrocarbons concentrations reported in the soil samples collected from MW-3 (at 5 feet bgs), MW-4 (at 15 and 30 feet bgs), MW-6 (at 10 feet bgs), and MW-7 (at 25 feet bgs) exceeded the MTCA Method A cleanup levels for the constituents identified. In addition, the oil-range hydrocarbons concentration reported in the soil sample collected from MW-3 (at 5 feet bgs) exceeded the MTCA Method A cleanup level for oil-range hydrocarbons. Benzene, naphthalene, and xylenes were also reported at concentrations exceeding their respective MTCA Method A cleanup levels at multiple locations throughout the Site (see Figure 3).

Arsenic was reported at a concentration of 48.4 milligrams per kilogram (mg/kg) in 1 of the 17 samples submitted for analysis for this constituent. This reported concentration exceeds the MTCA Method A cleanup level for arsenic of 20 mg/kg. The remaining metals were either not identified at concentrations above the laboratory's sample quantitation limit, or were reported at concentrations that do not exceed the applicable MTCA Method A cleanup levels. PCBs were not detected in any of the soil samples submitted for chemical analysis from the Site.

SVOCs and PAHs were reported in 14 of the 17 soil samples collected throughout the Site. Laboratory-reported carcinogenic polycyclic aromatic hydrocarbon (cPAH) concentrations from twelve of the sample locations exceeded the MTCA Method A toxicity equivalent (TEQ) value for total cPAHs of 0.1 mg/kg. The

remaining detections did not exceed the MTCA Method A cleanup level. In addition, the naphthalene concentrations reported in 6 of the 17 soil samples exceeded the MTCA Method A cleanup level for naphthalene. Chemical analytical results for the soil samples are summarized in Table 1 through Table 3. Laboratory reports are presented in Appendix B.

### 3.2.3 Groundwater

Groundwater was encountered at depths ranging from 15 to 35 feet bgs (elevations of 10.35 to 2.92 feet above mean sea level) during groundwater monitoring of the eight monitoring wells installed on the Site between May 21, and May 24, 2007. Groundwater samples were obtained from the eight groundwater monitoring wells using low-flow sampling techniques and were submitted to TestAmerica Laboratory in Bothell, Washington for chemical analysis.

Gasoline-, diesel-, and oil-range hydrocarbons and/or VOCs were identified in each of the nine groundwater samples collected from the property. The gasoline- and diesel-range hydrocarbons concentrations reported in the groundwater samples collected from MW-4, MW-6, and MW-8 exceeded the MTCA Method A cleanup levels for the constituents identified. In addition, the gasoline-range hydrocarbons concentration reported in the groundwater sample collected from MW-3 exceeded the MTCA Method A cleanup level for gasoline-range hydrocarbons. Benzene, naphthalene, and carbon tetrachloride were also reported at concentrations exceeding their respective MTCA Method A cleanup levels (or Method B cleanup level in the case of carbon tetrachloride) at multiple locations throughout the Site (see Figure 5).

Reported concentrations of arsenic, chromium, and lead (at MW-3 and MW-4) and hexavalent chromium (at MW-5 and MW-8) in groundwater samples submitted for analysis exceed the applicable MTCA Method A cleanup levels for these constituents. The remaining metals were either reported at concentrations that do not exceed the applicable MTCA Method A cleanup levels, or were not identified at concentrations above the laboratory's sample quantitation limit. PCBs were not identified in any of the groundwater samples collected at the property.

SVOCs and PAHs were reported in 6 of the 8 groundwater samples collected throughout the Site. Laboratory-reported cPAH concentrations from five of the sample locations (MW-3, MW-4, MW-5, MW-6, and MW-8) exceeded the MTCA Method A toxicity equivalent (TEQ) value for total cPAHs of 0.1 microgram per liter ( $\mu\text{g/L}$ ). In addition, the naphthalene concentration reported in the groundwater sample collected from MW-4, and the pentachlorophenol concentration reported in the groundwater sample collected from MW-8 exceeded the MTCA Method A cleanup level for the constituents identified. The remaining detections did not exceed the applicable MTCA Method A cleanup levels. Chemical analytical results for the groundwater samples are summarized in Table 4 through Table 6. Laboratory reports are presented in Appendix B.

## 4.0 FINDINGS

A Preliminary Upland Assessment was conducted at the McConkey/Sesko Site located at 1725 Pennsylvania Avenue in Bremerton, Kitsap County, Washington from May through June 2007. The purpose of the study was to assess the potential presence of hazardous substances in soil and shallow groundwater at potential contaminant source areas that were identified in previous studies. The findings are:

- Soil at the Site is impacted with VOCs, gasoline-, diesel-, and oil-range hydrocarbons, arsenic and cPAHs at concentrations exceeding the applicable MTCA Method A Method B cleanup levels for these constituents. These contaminants were observed in the vicinity of former bulk fuel and gas plant facilities, generally from ground surface downward to depths greater than 30 feet bgs.

- Groundwater at the Site is impacted with VOCs, gasoline-, and diesel-range hydrocarbons, arsenic, chromium, hexavalent chromium, lead, SVOCs, and cPAHs at concentrations exceeding the applicable MTCA Method A or Method B cleanup levels for these constituents.

The objective of the assessment activities was to assess the potential presence of hazardous substances in soil and shallow groundwater at potential contaminant source areas. Additional site assessment activities would be required to evaluate the extent and magnitude of the documented release(s) identified.

## **5.0 LIMITATIONS**

This Preliminary Upland Assessment has been prepared for the exclusive use of the City of Bremerton and their authorized agents. GeoEngineers has performed this Preliminary Upland Assessment of the at the McConkey/Sesko Site located at 1725 Pennsylvania Avenue in Bremerton, Kitsap County, Washington in general accordance with the scope and limitations of our services agreement dated December 20, 2006 (amended on May 29, 2007). No other party may rely on the product of our services unless we agree in advance and in writing to such reliance. Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted environmental science practices in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood. No study can wholly eliminate uncertainty regarding environmental conditions at a site. There is always a potential that areas of contamination exist that were not identified during past studies.

Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

Please refer to Appendix C titled "Report Limitations and Guidelines for Use" for additional information pertaining to use of this report.

TABLE 1  
SUMMARY OF SITE CHARACTERIZATION SOIL DATA  
PETROLEUM HYDROCARBONS AND VOCs  
OLD BREMERTON GASWORKS BROWNFIELD SITE  
BREMERTON, WASHINGTON

Sample Name <sup>1</sup>	Sample Depth (feet bgs)	Sample Elevation (feet AMSL)	Date Sampled	Field Screening Results <sup>2</sup>		Petroleum Hydrocarbons (mg/kg) <sup>3</sup>			VOCs <sup>4</sup> (mg/kg)
				Headspace Vapors (ppm)	Sheen	Gasoline-Range	Diesel-Range	Heavy Oil-Range	
MW-1	5.0	40.5	5/21/2007	<1.0	NS	<13.2	<13.2	<32.9	ND
	35.0	10.5	5/21/2007	74.1	SS	<10.3	<12.1	<30.3	n-Hexane - 0.00121 Methylene Chloride - 0.0108 Trichloroethene - 0.00147
MW-2	10.0	33.0	5/21/2007	13.6	MS	21.9	617	965	<b>Benzene - 0.139</b> Ethylbenzene - 0.295 Naphthalene - 1.24 Total Xylenes - 0.353
	40.0	3.0	5/21/2007	25.0	NS	<12.3	<12.3	<30.7	ND
MW-3	5.0	34.7	5/22/2007	>2,000	SS	<b>645</b>	<b>6,710</b>	<b>2,250</b>	<b>Benzene - 1.93</b> Ethylbenzene - 3.29 p-Isopropyltoluene - 0.808 <b>Naphthalene - 465</b> Toluene - 1.41 1,2,4-Trimethylbenzene - 6.70 1,3,5-Trimethylbenzene - 2.41 Total Xylenes - 8.71
	25.0	14.7	5/22/2007	>2,000	NS	<10.8	<10.7	<26.6	Acetone - 0.0233 Naphthalene - 0.00914 Ethylbenzene - 0.893 p-Isopropyltoluene - 0.493
MW-4	15.0	20.7	5/23/2007	76.9	HS	<b>185</b>	<b>2,960</b>	412	<b>Naphthalene - 63.9</b> 1,2,4-Trimethylbenzene - 1.92 1,3,5-Trimethylbenzene - 0.426 Total Xylenes - 1.51
	30.0	5.7	5/23/2007	646	HS	<b>635</b>	<b>4,370</b>	<274	n-Butylbenzene - 1.96 sec-Butylbenzene - 0.748 Ethylbenzene - 1.80 Isopropylbenzene - 0.6 p-Isopropyltoluene - 1.49 <b>Naphthalene - 50.7</b> n-Propylbenzene - 0.952 1,2,4-Trimethylbenzene - 8.31 Total Xylenes - 2.60
MW-5	10.0	8.4	5/24/2007	1,426	SS	<5.62	402	232	Benzene - 0.00779 Ethylbenzene - 0.011 Naphthalene - 0.00841
	20.0	-1.60	5/24/2007	NM	NS	<5.69	<11.6	<29.0	<b>Benzene - 0.0416</b> Toluene - 0.143
MW-6	5.0		5/22/2007	>2,000	NS	<11.5	<11.4	<28.5	ND
	10.0	25.5	5/22/2007	186	MS	<b>541</b>	<b>3,770</b>	390	<b>Naphthalene - 2,290</b> Toluene - 5.0 1,2,4-Trimethylbenzene - 13.2 1,3,5-Trimethylbenzene - 3.67 <b>Total Xylenes - 16.7</b>
	35.0	0.5	5/22/2007	104	SS	<9.16	<11.2	<28.1	Benzene - 0.00722 Ethylbenzene - 0.00475 Naphthalene - 0.177
MW-7	5.0	28.6	5/23/2007	183	SS	10.6	17.1	<30.6	Toluene - 0.198 1,2,4-Trimethylbenzene - 0.103 Total Xylenes - 0.363
	25.0	8.6	5/23/2007	328	HS	<b>216</b>	<b>30,200</b>	<2,900	n-Butylbenzene - 1.78 sec-Butylbenzene - 0.915 Ethylbenzene - 0.25 Isopropylbenzene - 0.418 p-Isopropyltoluene - 1.65 <b>Naphthalene - 14.7</b> n-Propylbenzene - 0.792 1,2,4-Trimethylbenzene - 6.85 1,3,5-Trimethylbenzene - 0.927 Total Xylenes - 0.421
MW-8	10.0	25.6	5/22/2007	10.1	SS	<11.8	<11.6	<29.0	ND
	25.0	10.6	5/22/2007	22.0	SS	<11.9	336	138	Styrene - 0.814
MTCA Method A Cleanup Level <sup>5</sup>						30	2,000	2,000	Acetone - 8,000 <sup>6</sup> Benzene - 0.03 n-Butylbenzene - NE sec-Butylbenzene - NE Ethylbenzene - 6.0 n-Hexane - 4,800 <sup>6</sup> Isopropylbenzene - 8,000 <sup>6</sup> p-Isopropyltoluene - 1,200 <sup>6</sup> Methylene Chloride - 0.02 Naphthalene - 5.0 n-Propylbenzene - NE Styrene - 33.0 <sup>6</sup> Trichloroethene - 0.03 1,2,4-Trimethylbenzene - 4,000 <sup>6</sup> 1,3,5-Trimethylbenzene - 4,000 <sup>6</sup> Toluene - 7.0 Total Xylenes - 9.0

**Notes:**<sup>1</sup>The approximate exploration locations are shown on Figure 2.<sup>2</sup>Field screening using a photoionization detector (PID) and sheen pan. NS=no sheen; SS=slight sheen; MS=moderate sheen; HS=heavy sheen.<sup>3</sup>Analyzed by Ecology Method NWTPH-Gx, and/or Dx with acid-silica gel cleanup.<sup>4</sup>Volatile organic compounds analyzed by EPA Method 8060B. Only those constituents detected above the sample quantitation limit are shown.<sup>5</sup>For unrestricted land use. MTCA Method B cleanup levels are referenced when Method A cleanup levels are not available.<sup>6</sup>MTCA Method B cleanup level.

mg/kg = milligrams per kilogram

bgs = below ground surface

AMSL = above mean sea level

ppm = parts per million

NM = not measured

NE=not established

MTCA = Model Toxics Control Act

Chemical analyses performed by TestAmerica Laboratories of Bothell, Washington.

Bolding/shading indicates detected analyte concentration exceeds the MTCA cleanup level.

SEAT:P:\0\0892017\00\Working\Data Summary Tables.xls

TABLE 2  
SUMMARY OF SITE CHARACTERIZATION SOIL DATA  
METALS AND PCBs  
OLD BREMERTON GASWORKS BROWNFIELD SITE  
BREMERTON, WASHINGTON

Sample Name <sup>1</sup>	Sample Depth (feet bgs)	Date Sampled	Total Metals <sup>2</sup> (mg/kg)															PCBs <sup>3</sup> (mg/kg)
			Antimony	Arsenic	Beryllium	Cadmium	Chromium	Chromium VI	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Tributyltin	Zinc	
MW-1	5.0	5/21/2007	<1.98	3.49	<0.661	<0.661	39.5	<1.2	24.8	3.86	<0.134	48.3	<0.661	<0.661	<0.661	<0.00076	61.7	<0.0328
	35.0		<1.82	1.35	<0.607	<0.607	19.8	<1.2	8.01	1.58	<0.111	32.5	<0.607	<0.607	<0.607	<0.00074	23.9	<0.0304
MW-2	10.0	5/21/2007	<1.69	3.18	<0.563	<0.563	35.0	<1.1	18.4	41.3	<0.107	40.6	<0.563	<0.563	<0.563	<0.00081	44.3	<0.0281
	40.0		<1.84	0.797	<0.613	<0.613	24.7	<1.2	10.1	1.34	<0.131	32.0	<0.613	<0.613	<0.613	<0.00080	24.7	<0.0308
MW-3	5.0	5/22/2007	<1.80	48.40	<0.600	<0.600	26.3	<1.1	37.8	87.0	<0.129	37.5	<0.600	<0.600	<0.600	<0.00079	166.00	<0.0588
	25.0		<1.62	1.27	<0.540	<0.540	23.9	<1.1	11.0	1.54	<0.0976	36.2	<0.540	<0.540	<0.540	<0.00069	24.9	<0.0273
MW-4	15.0	5/23/2007	<1.63	2.58	<0.544	<0.544	31.8	<1.1	23.3	13.9	<0.101	38.1	<0.544	<0.544	<0.544	<0.0014	67.2	<0.0587
	30.0		<1.53	4.80	<0.509	<0.509	46.5	<1.0	22.0	2.12	<0.0937	44.6	<0.509	<0.509	<0.509	<0.0014	34.8	<0.0553
MW-5	10.0	5/24/2007	<1.86	3.81	<0.620	<0.620	33.1	<1.1	79.1	131	1.62	61.1	<0.620	<0.620	<0.620	<0.0016	204	<0.00642
	20.0		<1.53	0.83	<0.511	<0.511	26.3	<1.2	11.1	1.44	<0.0941	34.6	<0.511	<0.511	<0.511	<0.0015	27.0	<0.00289
MW-6	5.0	5/22/2007	<1.64	1.64	<0.547	<0.547	33.1	<1.1	15.5	2.78	<0.113	38.6	<0.547	<0.547	<0.547	<0.00074	30.5	<0.0288
	10.0		<1.58	1.26	<0.527	<0.527	19.9	<1.1	9.47	1.36	<0.104	28.8	<0.527	<0.527	<0.527	<0.00072	22.7	<0.0508
	35.0		<1.82	0.84	<0.605	<0.605	24.8	<1.0	16.4	1.30	<0.111	33.3	<0.605	<0.605	<0.605	<0.0016	31.7	<0.0554
MW-7	5.0	5/23/2007	<1.84	2.72	<0.614	<0.614	40.1	<1.2	18.2	5.75	<0.111	51.8	<0.614	<0.614	<0.614	<0.0016	48.1	<0.0301
	25.0		<1.81	1.01	<0.604	<0.604	25.2	<1.0	12.5	1.67	<0.0956	43.3	<0.604	<0.604	<0.604	<0.0014	26.2	<0.0289
MW-8	10.0	5/22/2007	<1.77	6.72	<0.589	0.966	36.0	<1.0	68.1	246	0.392	42.1	<0.589	<0.589	<0.589	<0.00072	291	<0.0291
	25.0		<1.69	2.25	<0.562	<0.562	39.4	<1.1	23.3	4.75	<0.105	37.2	<0.562	<0.562	<0.562	<0.00076	48.0	<0.0301
MTCA Method A Cleanup Level <sup>4</sup>			32 <sup>5</sup>	20	160 <sup>5</sup>	2	2,000	19	3000 <sup>5</sup>	250	2	1600 <sup>5</sup>	400 <sup>5</sup>	400 <sup>5</sup>	5.6 <sup>5</sup>	2.4 <sup>5</sup>	24,000 <sup>5</sup>	1

**Notes:**<sup>1</sup>The approximate exploration locations are shown on Figure 2.<sup>2</sup>Metals analyzed by EPA 6000/7000 series methods, except Tributyltin, which was analyzed by the Krone method.<sup>3</sup>Polychlorinated biphenyls; analyzed by EPA Method 8082.<sup>4</sup>For unrestricted land use. MTCA Method B cleanup levels are referenced when Method A cleanup levels are not available.<sup>5</sup>MTCA Method B cleanup level.

bgs = below ground surface                      mg/kg = milligrams per kilogram

"-" = not analyzed                      MTCA = Model Toxics Control Act

Chemical analyses performed by TestAmerica Laboratories of Bothell, Washington.

Bolding/shading indicates detected analyte concentration exceeds the MTCA cleanup level.

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TABLE 3  
SUMMARY OF SITE CHARACTERIZATION SOIL DATA  
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)  
OLD BREMERTON GASWORKS BROWNFIELD SITE  
BREMERTON, WASHINGTON

Sample Number <sup>1</sup>	Sample Depth (feet bgs)	Date Sampled	Non-carcinogenic PAHs <sup>2</sup> (mg/kg)								
			Acenaph-thene	Acenaph-thylene	Anthtra-cene	Benzo(ghi)-perylene	Fluoran-thene	Fluorene	Naph-thalenes	Phenan-threne	Pyrene
MW-1	5.0	5/21/2007	<0.0130	<0.0130	<0.0130	<0.0130	<0.0130	<0.0130	<0.0130	<0.0130	<0.0130
	35.0	5/21/2007	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120
MW-2	10.0	5/21/2007	0.671	3.51	2.05	10.6	11.9	1.27	<b>6.48</b>	6.67	18.4
	40.0	5/21/2007	<0.0123	<0.0123	<0.0123	<0.0123	<0.0123	<0.0123	<0.0123	<0.0123	<0.0123
MW-3	5.0	5/22/2007	18.5	204	273	31.9	137	182	<b>835</b>	379	192
	25.0	5/22/2007	0.0108	0.0151	<0.0108	<0.0108	<0.0108	0.0130	0.0662	0.0122	<0.0108
MW-4	15.0	5/23/2007	6.12	2.19	23.6	8.66	33.6	20.2	<b>50</b>	65.7	53.1
	30.0	5/23/2007	18.3	1.49	11.6	4.04	15.6	13.4	<b>147.3</b>	37.3	24.9
MW-5	10.0	5/24/2007	<0.612	3.02	11.1	14.6	49.90	4.57	4.69	50.8	85.5
	20.0	5/24/2007	0.0205	<0.0114	0.0198	<0.0114	0.0122	<0.0114	0.0547	0.0843	0.0137
MW-6	5.0	5/22/2007	<0.0230	0.0490	0.0613	0.0398	0.123	0.0659	0.0245	0.253	0.161
	10.0	5/22/2007	31.2	303	233	79.0	321	313	<b>1,398</b>	856	428
	35.0	5/22/2007	<0.114	0.523	0.774	0.159	0.933	0.781	3.70	2.66	1.27
MW-7	5.0	5/23/2007	<0.243	<0.243	<0.243	1.98	3.22	<0.243	<0.243	0.648	3.87
	25.0	5/23/2007	<0.566	<0.566	<0.566	0.604	4.0	4.53	<b>84.7</b>	13.7	5.28
MW-8	10.0	5/22/2007	<1.47	<1.47	1.47	<1.47	<1.47	<1.47	<1.47	4.21	1.96
	25.0	5/22/2007	<1.48	6.24	14.9	39.5	65.2	<1.48	<1.48	17.2	147
MTCA Method A Cleanup Level <sup>3</sup>			<b>4,800<sup>4</sup></b>	<b>NE</b>	<b>24,000<sup>4</sup></b>	<b>NE</b>	<b>3,200<sup>4</sup></b>	<b>3,200<sup>4</sup></b>	<b>5</b>	<b>NE</b>	<b>2,400<sup>4</sup></b>

Sample Number <sup>1</sup>	Sample Depth (feet bgs)	Date Sampled	Carcinogenic PAHs <sup>2</sup> (mg/kg)							
			Benzo(a)-anthracene	Benzo(a)-pyrene	Benzo(b)-fluoranthene	Benzo(k)-fluoranthene	Chrysene	Dibenz(a,h)-anthracene	Indeno(1,2,3-cd)-pyrene	Total cPAHs (TEQ) <sup>5</sup>
MW-1	5.0	5/21/2007	<0.0130	<0.0130	<0.0130	<0.0130	<0.0130	<0.0130	<0.0130	---
	35.0	5/21/2007	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	---
MW-2	10.0	5/21/2007	5.44	11.5	6.94	6.00	9.17	2.09	6.49	14.9
	40.0	5/21/2007	<0.0123	<0.0123	<0.0123	<0.0123	<0.0123	<0.0123	<0.0123	---
MW-3	5.0	5/22/2007	59.7	58.9	26.1	34.9	69.2	8.48	26.8	77.7
	25.0	5/22/2007	<0.0108	<0.0108	<0.0108	0.0130	<0.0108	<0.0108	<0.0108	---
MW-4	15.0	5/23/2007	11.8	11.9	5.93	7.93	13.7	2.35	6.31	16.2
	30.0	5/23/2007	5.03	6.81	2.62	3.83	6.66	1.28	2.91	8.83
MW-5	10.0	5/24/2007	21.0	16.7	12.5	14.6	28.90	4.37	11.1	24.7
	20.0	5/24/2007	<0.0114	<0.0114	<0.0114	0.0129	<0.0114	<0.0114	<0.0114	---
MW-6	5.0	5/22/2007	0.0475	0.0782	0.0368	0.0536	0.0644	0.0245	0.0368	0.11
	10.0	5/22/2007	113	116	57.4	60.6	146	22.8	58.5	155.5
	35.0	5/22/2007	0.265	0.394	0.152	0.250	0.349	<0.114	0.129	0.5
MW-7	5.0	5/23/2007	1.22	1.78	1.22	1.49	2.03	0.486	1.52	2.54
	25.0	5/23/2007	1.21	1.85	0.754	1.24	1.58	<0.566	0.604	2.35
MW-8	10.0	5/22/2007	<1.47	2.84	<1.47	1.76	<1.47	<1.47	<1.47	3.54
	25.0	5/22/2007	37.6	47.0	27.3	29.0	53.1	10.3	28.7	63.9
MTCA Method A Cleanup Level <sup>3</sup>			0.137 <sup>4</sup>	0.1	0.137 <sup>4</sup>	0.137 <sup>4</sup>	0.137 <sup>4</sup>	0.137 <sup>4</sup>	0.137 <sup>4</sup>	0.1

**Notes:**<sup>1</sup>The approximate exploration locations are shown in Figure 2.<sup>2</sup>Analyzed by EPA Method 8270 SIM.<sup>3</sup>For unrestricted land use. MTCA Method B cleanup levels are referenced when Method A cleanup levels are not available.<sup>4</sup>MTCA Method B cleanup level.<sup>5</sup>Cleanup level for total carcinogenic PAHs; calculated using toxic equivalent (TEQ) relative to benzo(a)pyrene per WAC 173-340-780(8). cPAHs that were not detected were assigned a value of one-half the detection limit for these calculations.

mg/kg = milligrams per kilogram

bgs = below ground surface

NE = not established

MTCA = Model Toxics Control Act

Chemical analyses performed by TestAmerica Laboratories of Bothell, Washington.

Bolding/shading indicates detected analyte concentration exceeds the MTCA cleanup level.

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TABLE 4  
SUMMARY OF SITE CHARACTERIZATION GROUNDWATER DATA  
PETROLEUM HYDROCARBONS AND VOCs  
OLD BREMERTON GASWORKS BROWNFIELD SITE  
BREMERTON, WASHINGTON

Sample Name <sup>1</sup>	Date Sampled	Monitoring Well Top of Casing Elevation (feet AMSL)	Depth to Groundwater (feet bgs)	Groundwater Elevation (feet AMSL)	Petroleum Hydrocarbons (ug/L) <sup>2</sup>			VOCs <sup>3</sup> (ug/L)
					Gasoline- Range	Diesel- Range	Heavy Oil- Range	
MW-1	6/1/2007	45.03	34.68	10.35	<50.0	<236	<472	<b>Carbon Tetrachloride - 0.660</b> Chloroform - 2.84 Trichloroethene - 4.79
MW-2	6/1/2007	42.54	35.25	7.29	63.5	<236	<472	<b>Benzene - 18.4</b> Chloroform - 1.42 1,2-Dichloroethane - 4.72 Trichloroethene - 0.610
MW-3	6/1/2007	39.10	32.90	6.20	<b>2,800</b>	<236	<472	<b>Benzene - 826</b> n-Butylbenzene - 0.480 sec-Butylbenzene - 0.370 Chloroform - 0.20 1,2-Dichloroethane - 3.06 cis-1,2-Dichloroethene - 0.370 Ethylbenzene - 151 Isopropylbenzene - 5.29 p-Isopropyltoluene - 0.90 <b>Naphthalene - 345</b> n-Propylbenzene - 6.41 Toluene - 4.21 Trichloroethene - 0.330 1,2,4-Trimethylbenzene - 9.36 1,3,5-Trimethylbenzene - 1.87 Total Xylenes - 39.6
MW-4	6/1/2007	35.20	29.32	5.88	<b>10,600</b>	<b>18,500</b>	<2,360	<b>Benzene - 25.9</b> n-Butylbenzene - 6.10 sec-Butylbenzene - 4.80 cis-1,2-Dichloroethene - 1.29 Ethylbenzene - 308 Isopropylbenzene - 40.0 p-Isopropyltoluene - 8.90 <b>Naphthalene - 5,270</b> n-Propylbenzene - 9.70 Toluene - 45.4 Trichloroethene - 0.630 1,2,4-Trimethylbenzene - 176 1,3,5-Trimethylbenzene - 33.5 Total Xylenes - 536

Sample Name <sup>1</sup>	Date Sampled	Monitoring Well Top of Casing Elevation (feet AMSL)	Depth to Groundwater (feet bgs)	Groundwater Elevation (feet AMSL)	Petroleum Hydrocarbons (ug/L) <sup>2</sup>			VOCs <sup>3</sup> (ug/L)
					Gasoline- Range	Diesel- Range	Heavy Oil- Range	
MW-5	6/1/2007	18.51	15.21	3.30	481	<236	<472	<b>Benzene - 85.1</b> Ethylbenzene - 10.1 Isopropylbenzene - 5.25 Naphthalene - 25.5 Toluene - 0.450 1,2,4-Trimethylbenzene - 3.52 1,3,5-Trimethylbenzene - 0.530 Total Xylenes - 8.29
MW-6	6/1/2007	34.95	30.20	4.75	3,450	540	<472	<b>Benzene - 950</b> n-Butylbenzene - 0.590 sec-Butylbenzene - 0.360 1,2-Dichloroethane - 0.930 cis-1,2-Dichloroethene - 0.740 Ethylbenzene - 187 n-Hexane - 1.17 Isopropylbenzene - 8.93 p-Isopropyltoluene - 0.270 Naphthalene - 54.9 n-Propylbenzene - 3.14 Toluene - 3.07 1,2,4-Trimethylbenzene - 10.3 1,3,5-Trimethylbenzene - 1.26 Total Xylenes - 19.2
MW-6 (Duplicate)	6/1/2007	34.95	30.20	4.75	3,400	646	<0.472	<b>Benzene - 826</b> n-Butylbenzene - 0.520 sec-Butylbenzene - 0.400 1,2-Dichloroethane - 0.850 cis-1,2-Dichloroethene - 0.770 Ethylbenzene - 160 Isopropylbenzene - 8.90 p-Isopropyltoluene - 0.250 Naphthalene - 64.6 n-Propylbenzene - 3.29 Toluene - 3.17 1,2,4-Trimethylbenzene - 10.6 1,3,5-Trimethylbenzene - 1.22 Total Xylenes - 20.3
MW-7	6/1/2007	33.24	30.21	3.03	174	447	<472	Benzene - 2.23 sec-Butylbenzene - 0.320 Ethylbenzene - 0.530 Naphthalene - 3.19 Trichloroethene - 0.400

Sample Name <sup>1</sup>	Date Sampled	Monitoring Well Top of Casing Elevation (feet AMSL)	Depth to Groundwater (feet bgs)	Groundwater Elevation (feet AMSL)	Petroleum Hydrocarbons (ug/L) <sup>2</sup>			VOCs <sup>3</sup> (ug/L)
					Gasoline- Range	Diesel- Range	Heavy Oil- Range	
MW-8	6/1/2007	35.56	32.64	2.92	4,850	1,860	<472	<b>Benzene - 650</b> n-Butylbenzene - 0.580 sec-Butylbenzene - 0.570 Ethylbenzene - 244 Isopropylbenzene - 8.15 p-Isopropyltoluene - 1.17 <b>Naphthalene - 1,070</b> n-Propylbenzene - 2.38 Toluene - 1.49 1,2,4-Trimethylbenzene - 49.0 1,3,5-Trimethylbenzene - 5.60 Total Xylenes - 211
MTCA Method A Cleanup Level <sup>4</sup>					800	500	500	Benzene - 5.0 n-Butylbenzene - NE sec-Butylbenzene - NE Carbon Tetrachloride - 0.34 <sup>5</sup> Chloroform - 7.2 <sup>5</sup> 1,2-Dichloroethane - 5.0 cis-1,2-Dichloroethene - 80 <sup>5</sup> Ethylbenzene - 700 n-Hexane - 480 <sup>5</sup> Isopropylbenzene - 800 <sup>5</sup> p-Isopropyltoluene - NE Naphthalene - 160 n-Propylbenzene - NE Toluene - 1,000 Trichloroethene - 5.0 1,2,4-Trimethylbenzene - 400 <sup>5</sup> 1,3,5-Trimethylbenzene - 400 <sup>5</sup> Total Xylenes - 1,000

**Notes:**

<sup>1</sup>The approximate exploration locations are shown on Figure 2.

<sup>2</sup>Analyzed by Ecology Method NWTPH-Gx and NWTPH-Dx with silica gel cleanup.

<sup>3</sup>Volatile organic compounds analyzed by EPA Method 8060B. Only those constituents detected above the sample quantitation limit are reported.

<sup>4</sup>For unrestricted land use. MTCA Method B cleanup levels are referenced when Method A cleanup levels are not available.

<sup>5</sup>MTCA Method B cleanup level.

µg/L = micrograms per liter ND = not detected

feet AMSL = feet above mean sea level feet bgs = feet below ground surface

MTCA = Model Toxics Control Act

Chemical analyses performed by TestAmerica Laboratories of Bothell, Washington.

Bolding/shading indicates detected analyte concentration exceeds the MTCA cleanup level.

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TABLE 5  
SUMMARY OF SITE CHARACTERIZATION GROUNDWATER DATA  
DISSOLVED METALS AND PCBs  
OLD BREMERTON GASWORKS BROWNFIELD SITE  
BREMERTON, WASHINGTON

Sample Name <sup>1</sup>	Date Sampled		Dissolved Metals <sup>2</sup> (ug/L)														PCBs <sup>3</sup>
		Antimony	Arsenic	Beryllium	Cadmium	Chromium	Chromium VI	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Tributyltin	Zinc	(ug/L)
MW-1	6/1/2007	<3.0	1.54	<1.0	<1.0	11.8	6.0	10.1	1.55	<0.2	18.7	<1.0	<1.0	<1.0	<0.0019	13.4	<0.1
MW-2	6/1/2007	<3.0	1.08	<1.0	<1.0	5.15	<5.0	3.4	<1.0	<0.2	7.24	<1.0	<1.0	<1.0	<0.0019	<10.0	<0.1
MW-3	6/1/2007	<3.0	14.2	1.07	<1.0	228	48.0	130	18.3	0.246	232	<1.0	<1.0	<1.0	<0.0019	185	<0.1
MW-4	6/1/2007	<3.0	26.0	1.08	<1.0	177	33.0	143	21.6	<0.2	180	<1.0	<1.0	<1.0	<0.0019	155	<0.1
MW-5	6/1/2007	<3.0	2.83	<1.0	<1.0	6.07	61.0	9.0	5.12	<0.2	89.7	3.64	<1.0	<1.0	<0.0019	32.1	<0.1
MW-6	6/1/2007	<3.0	4.80	<1.0	<1.0	1.34	23.0	1.05	<1.0	<0.2	1.65	<1.0	<1.0	<1.0	<0.0019	<10.0	<0.1
MW-6 (Duplicate)	6/1/2007	<3.0	4.43	<1.0	<1.0	1.06	33.0	<1.0	<1.0	<0.2	1.32	<1.0	<1.0	<1.0	<0.0019	<10.0	<0.1
MW-7	6/1/2007	<3.0	1.43	<1.0	<1.0	15.6	11.0	13.1	2.23	<0.2	20.2	<1.0	<1.0	<1.0	<0.0019	18.0	<0.1
MW-8	6/1/2007	<3.0	4.69	<1.0	<1.0	9.28	90.0	8.94	4.47	<0.2	14.4	<1.0	<1.0	<1.0	<0.0019	12.7	<0.1
MTCA Method A Cleanup Level <sup>4</sup>		6.4 <sup>5</sup>	5	32 <sup>5</sup>	5	100	50	590 <sup>5</sup>	15	2	320 <sup>5</sup>	80 <sup>5</sup>	80 <sup>5</sup>	1.1 <sup>5</sup>	NE	4,800 <sup>5</sup>	0.1

**Notes:**<sup>1</sup>The approximate exploration locations are shown on Figure 2.<sup>2</sup>Metals analyzed by EPA 6000/7000 series methods, except Tributyltin, which was analyzed by the Krone method.<sup>3</sup>Polychlorinated biphenyls; analyzed by EPA Method 8082.<sup>4</sup>For unrestricted land use. MTCA Method B cleanup levels are referenced when Method A cleanup levels are not available.<sup>5</sup>MTCA Method B cleanup level.

μg/l = micrograms per liter

MTCA = Model Toxics Control Act

Chemical analyses performed by TestAmerica Laboratories of Bothell, Washington.

Bolding/shading indicates detected analyte concentration exceeds the MTCA cleanup level.

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TABLE 6  
SUMMARY OF SITE CHARACTERIZATION GROUNDWATER DATA  
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs) AND POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)  
OLD BREMERTON GASWORKS BROWNFIELD SITE  
BREMERTON, WASHINGTON

Sample Number <sup>1</sup>	Date Sampled	Non-carcinogenic PAHs <sup>2</sup> (ug/L)									SVOCs (ug/L)		
		Acenaph-thene	Acenaph-thylene	Anthtra-cene	Benzo(ghi)-perylene	Fluoran-thene	Fluorene	Naph-thalenes	Phenan-threne	Pyrene	Dibenzo furan	Phenol	Pentachloro phenol
MW-1	6/1/2007	<0.102	<0.102	<0.102	<0.102	<0.102	<0.102	<0.102	<0.102	<0.102	<10.2	<10.2	<10.2
MW-2	6/1/2007	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<9.71	<9.71	<9.71
MW-3	6/1/2007	1.1	3.26	4.72	0.0979	1.95	3.31	2.185	5.78	2.36	<9.71	75.5	<9.71
MW-4	6/1/2007	<b>361</b>	<94.3	120	<94.3	122	188	<b>5,612</b>	377	158	31.8	<9.43	<9.43
MW-5	6/1/2007	11.7	3.10	0.726	0.639	3.29	1.36	1.20	1.46	3.90	<9.43	<9.43	<9.43
MW-6	6/1/2007	13.5	23.5	4.23	0.221	8.33	9.43	67.0	5.73	9.39	<9.43	77.5	<9.43
MW-6 (Duplicate)	6/1/2007	11.0	18.9	1.32	0.104	7.38	5.10	0.445	<0.0943	8.13	<9.43	62.6	<9.43
MW-7	6/1/2007	<0.0943	0.222	<0.0943	<0.0943	<0.0943	0.102	0.184	<0.0943	0.174	<9.43	<9.43	<9.43
MW-8	6/1/2007	7.10	14.0	0.891	0.50	1.72	0.873	3.08	1.04	2.92	<9.90	81.6	<b>11.4</b>
MTCA Method A Cleanup Level <sup>3</sup>		160	NE	9600 <sup>4</sup>	640 <sup>4</sup>	NE	4800 <sup>4</sup>	640 <sup>4</sup>	480 <sup>4</sup>	NE	32 <sup>4</sup>	4800 <sup>4</sup>	0.73 <sup>4</sup>

Sample Number <sup>1</sup>	Date Sampled	Carcinogenic PAHs <sup>2</sup> (ug/L)							
		Benzo(a)-anthracene	Benzo(a)-pyrene	Benzo(b)-fluoranthene	Benzo(k)-fluoranthene	Chrysene	Dibenz(a,h)-anthracene	Indeno(1,2,3-cd)-pyrene	Total cPAHs (TEQ) <sup>3</sup>
MW-1	6/1/2007	<0.0102	<0.0102	<0.0102	<0.0102	<0.0102	<0.0102	<0.0102	---
MW-2	6/1/2007	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	---
MW-3	6/1/2007	0.389	0.217	0.0968	0.227	0.432	0.0437	0.0874	0.32
MW-4	6/1/2007	39.3	37.6	<9.43	<9.43	40.8	<9.43	<9.43	45.24
MW-5	6/1/2007	0.884	0.905	0.637	0.615	1.16	0.189	0.467	1.25
MW-6	6/1/2007	0.727	0.345	0.272	0.281	0.772	0.0678	0.167	0.52
MW-6 (Duplicate)	6/1/2007	0.430	0.158	0.115	0.189	0.392	0.0723	0.0985	0.27
MW-7	6/1/2007	0.0168	0.0247	<0.00943	0.0602	0.0372	<0.00943	<0.00943	0.0331
MW-8	6/1/2007	0.694	0.878	0.657	0.494	0.836	0.170	0.433	1.18
MTCA Method A Cleanup Level <sup>3</sup>		0.012 <sup>4</sup>	0.1	0.012 <sup>4</sup>	0.012 <sup>4</sup>	0.012 <sup>4</sup>	0.012 <sup>4</sup>	0.012 <sup>4</sup>	0.1

**Notes:**<sup>1</sup>The approximate exploration locations are shown in Figure 2.<sup>2</sup>Analyzed by EPA Method 8270 SIM.<sup>3</sup>For unrestricted land use. MTCA Method B cleanup levels are referenced when Method A cleanup levels are not available.<sup>4</sup>MTCA Method B cleanup level

µg/L = micrograms per liter

MTCA = Model Toxics Control Act

NE = not established

Chemical analyses performed by TestAmerica Laboratories of Bothell, Washington.

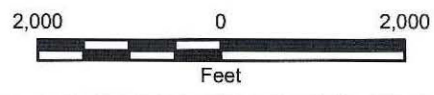
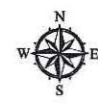
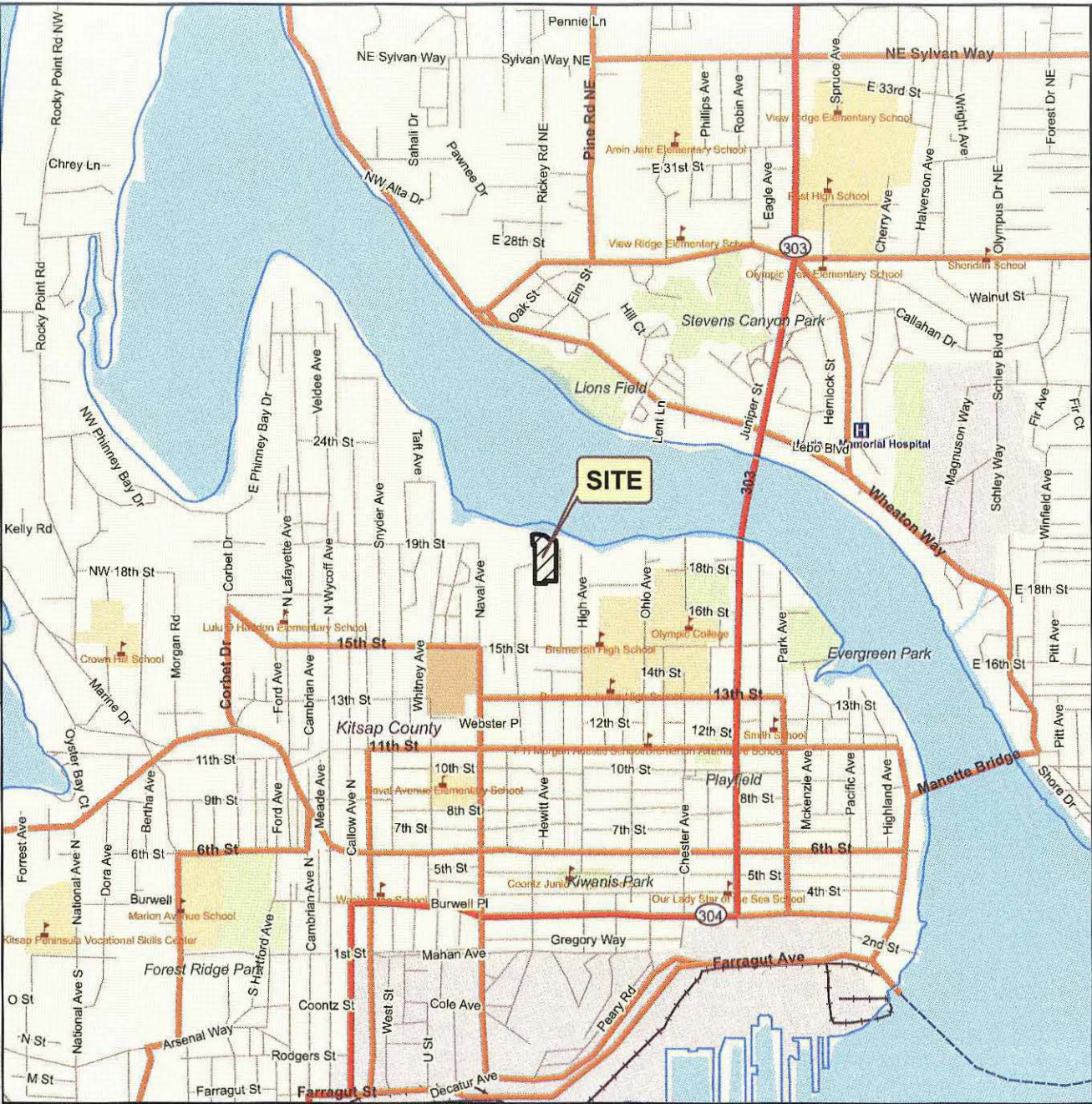
Bolding/shading indicates detected analyte concentration exceeds the MTCA cleanup level.

SEAT:P:\0\0892017\00\Working\Data Summary\Tables.xls




Map Revised: March 16, 2007

Office: SEAT Path: P:\00892017\00\GIS\089201700\Figure1.mxd



- Notes:
1. The locations of all features shown are approximate.
  2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
  3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: ESRI Data & Maps, Street Maps 2005  
Transverse Mercator, Zone 10 N North, North American Datum 1983  
North arrow oriented to grid north

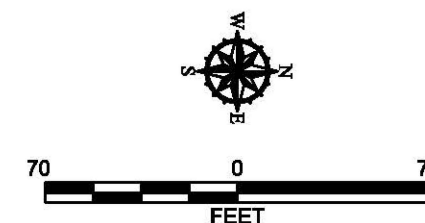
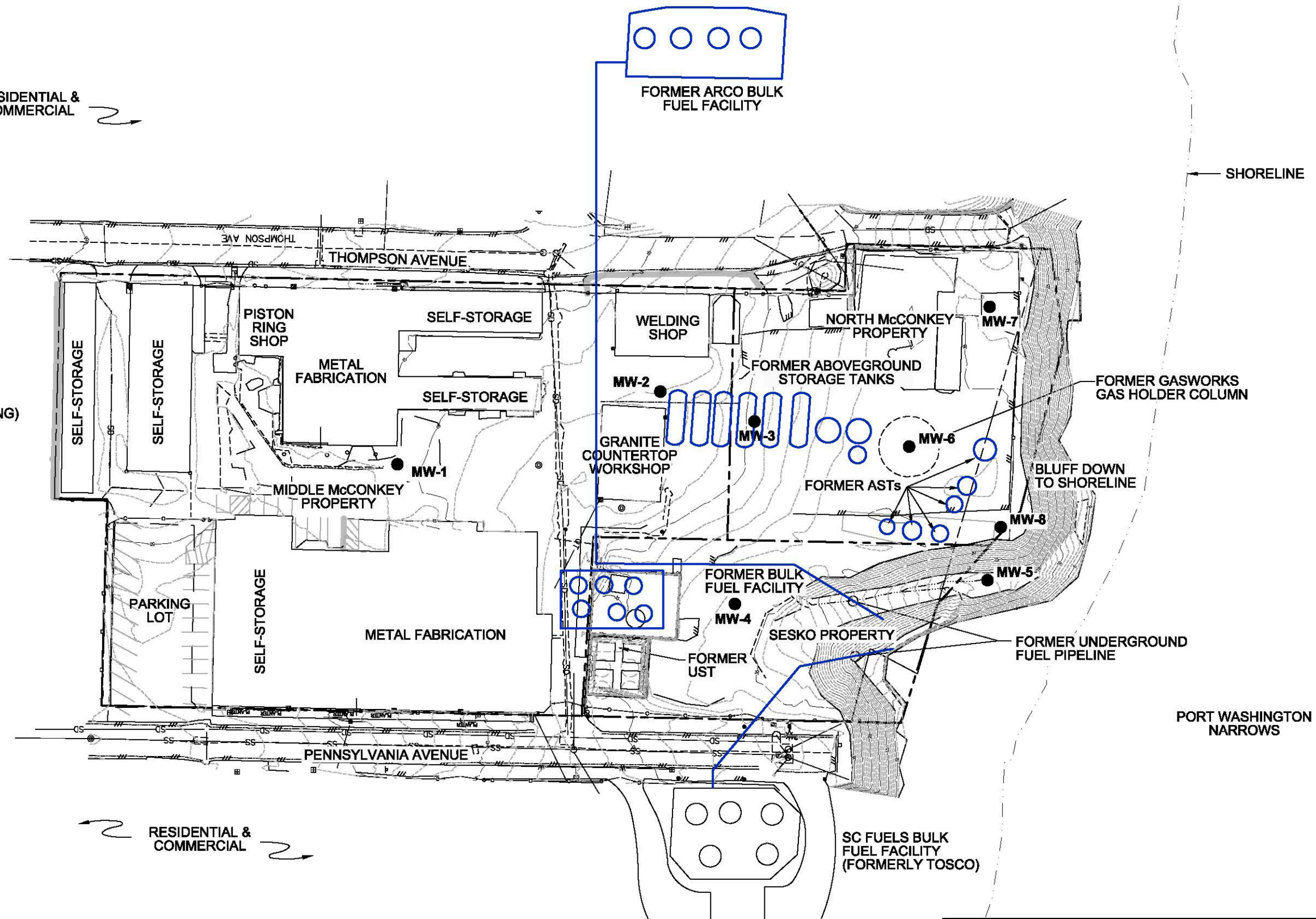
<b>Site and Vicinity Map</b>	
Old Bremerton Gas Works Site Bremerton, Washington	
<b>GEOENGINEERS</b> 	<b>Figure 1</b>



W:\SEATTLE\PROJECTS\10892017\100\CAD\1089201700-FIGURES.DWG\TAB.F2 MODIFIED BY BKARN ON SEP 20, 2007 - 14:21

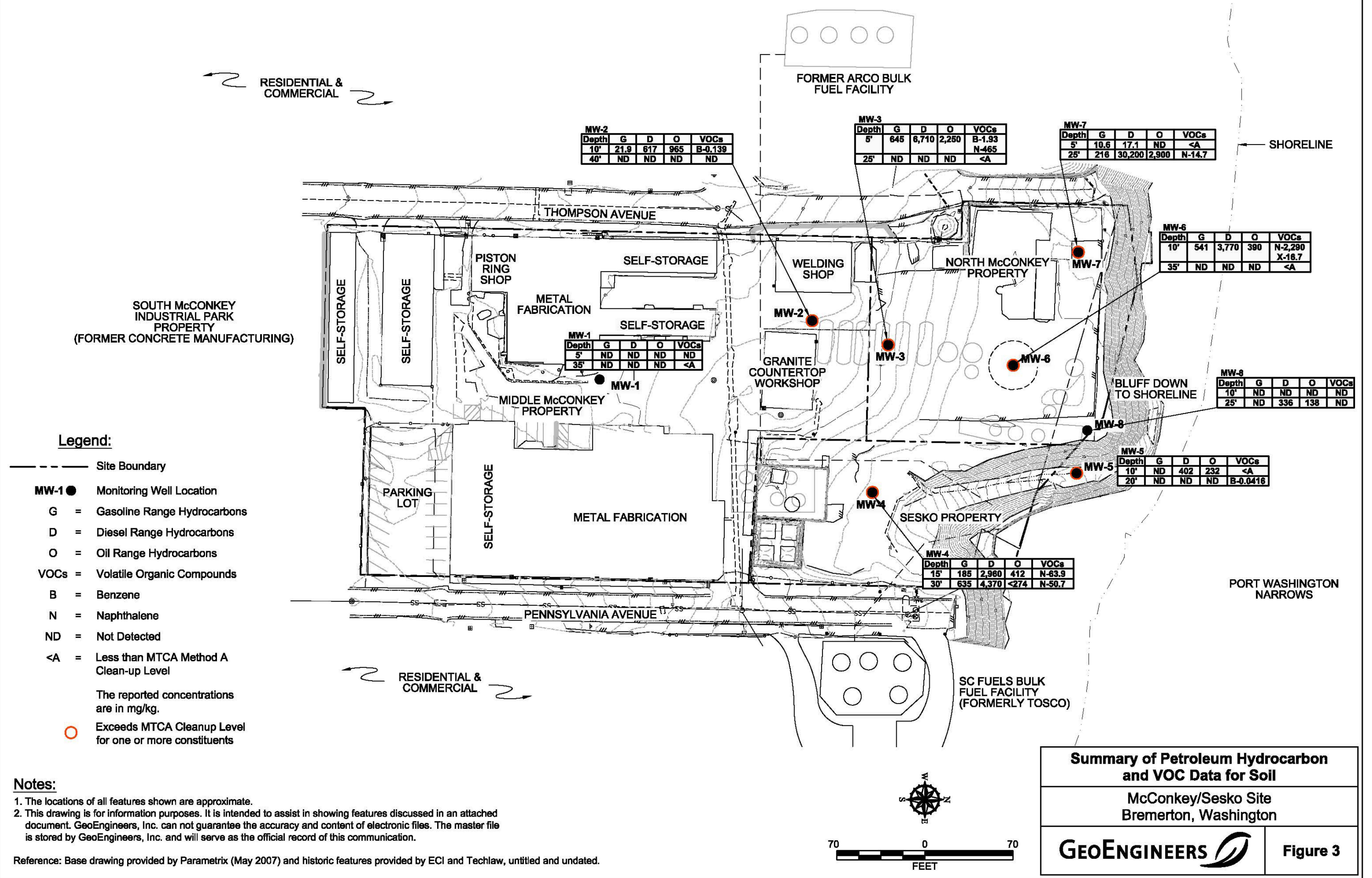
SOUTH McCONKEY  
INDUSTRIAL PARK  
PROPERTY  
(FORMER CONCRETE MANUFACTURING)

RESIDENTIAL &  
COMMERCIAL



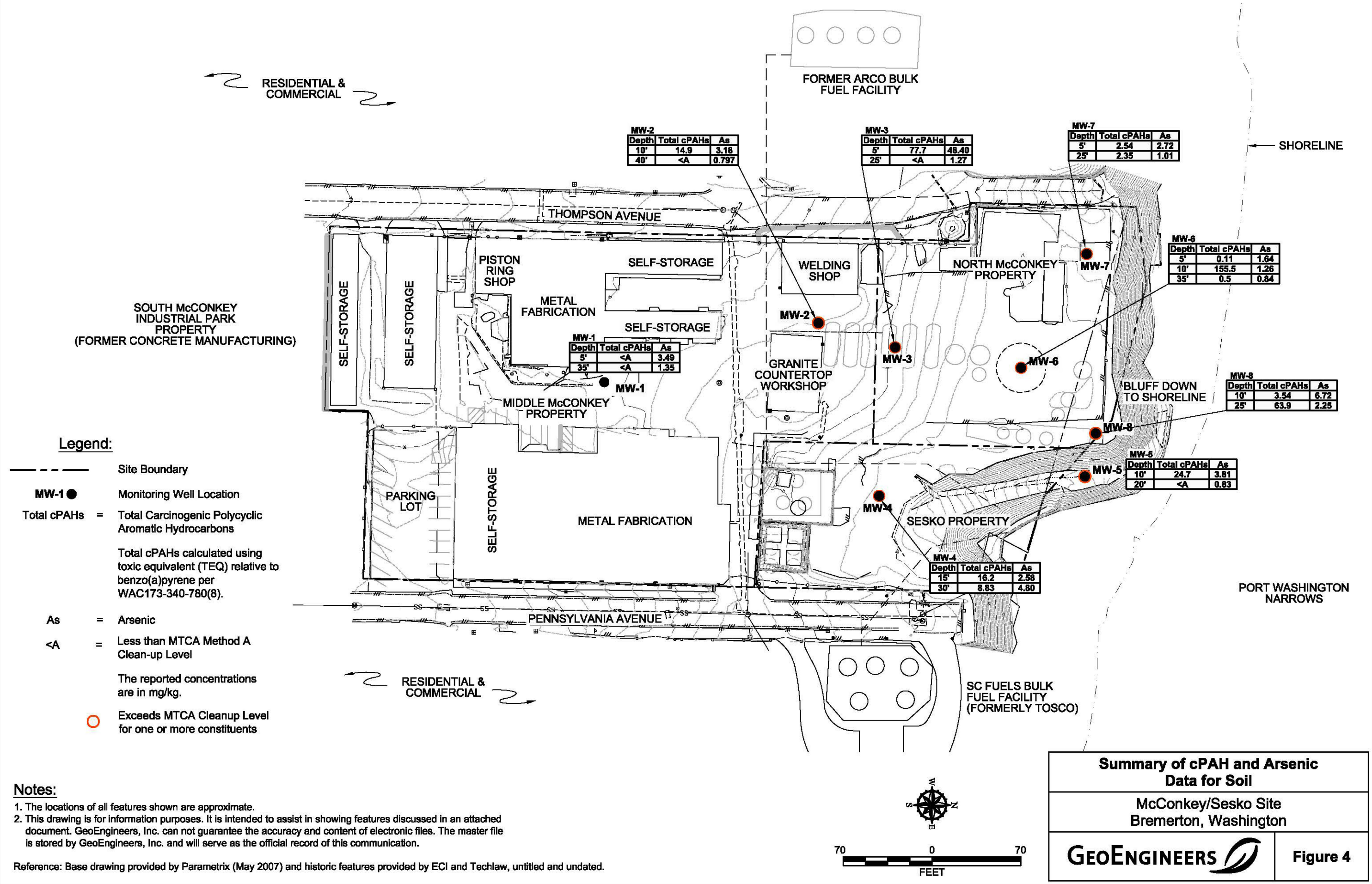


W:\SEATTLE\PROJECTS\10892017\100\CAD\089201700-FIGURES.DWG\TAB.F3 MODIFIED BY BKARN ON SEP 20, 2007 - 14:22



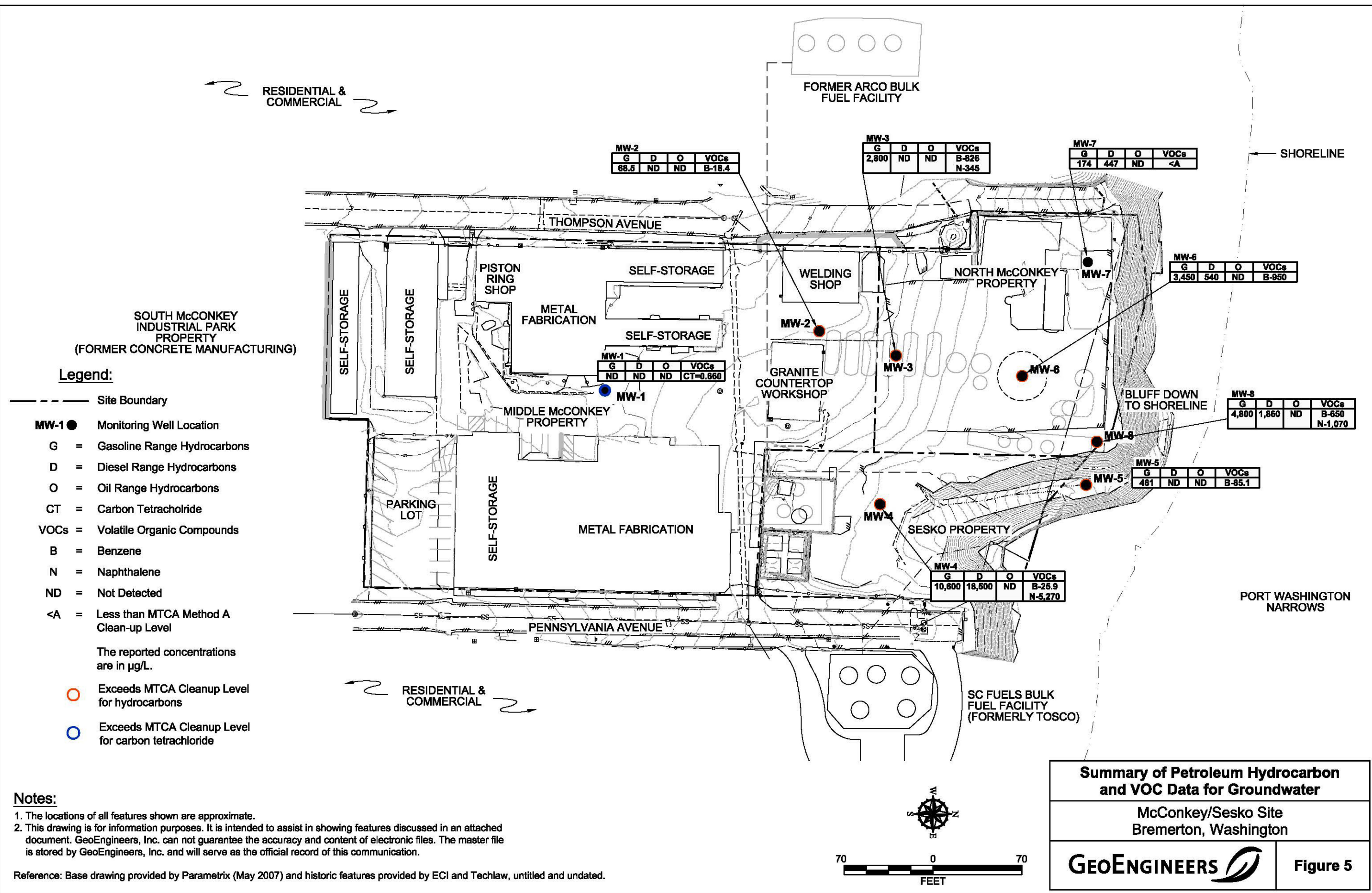


W:\SEATTLE\PROJECTS\10892017\100\CAD\089201700-FIGURES.DWG\TAB.F4, MODIFIED BY BKARN ON SEP 20, 2007 - 14:22





W:\SEATTLE\PROJECTS\10892017\100\CAD\089201700-FIGURES.DWG\TAB.F5 MODIFIED BY BKARN ON SEP 20, 2007 - 14:22





W:\SEATTLE\PROJECTS\108920\100\CAD\08920\700-FIGURES.DWG\TAB.F6 MODIFIED BY BKARN ON SEP 20, 2007 - 14:23

**Legend:**

--- Site Boundary

**MW-1 ●** Monitoring Well Location

Total cPAHs = Total Carcinogenic Polycyclic Aromatic Hydrocarbons

Total cPAHs calculated using toxic equivalent (TEQ) relative to benzo(a)pyrene per WAC173-340-780(8).

As = Arsenic

<A = Less than MTCA Method A Clean-up Level

The reported concentrations are in µg/L.

Cr = Chromium

Cr VI = Hexavalent Chromium

Pb = Lead

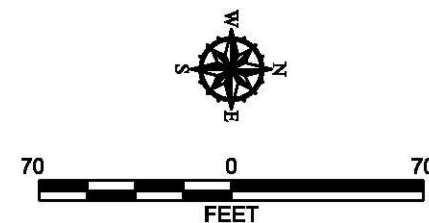
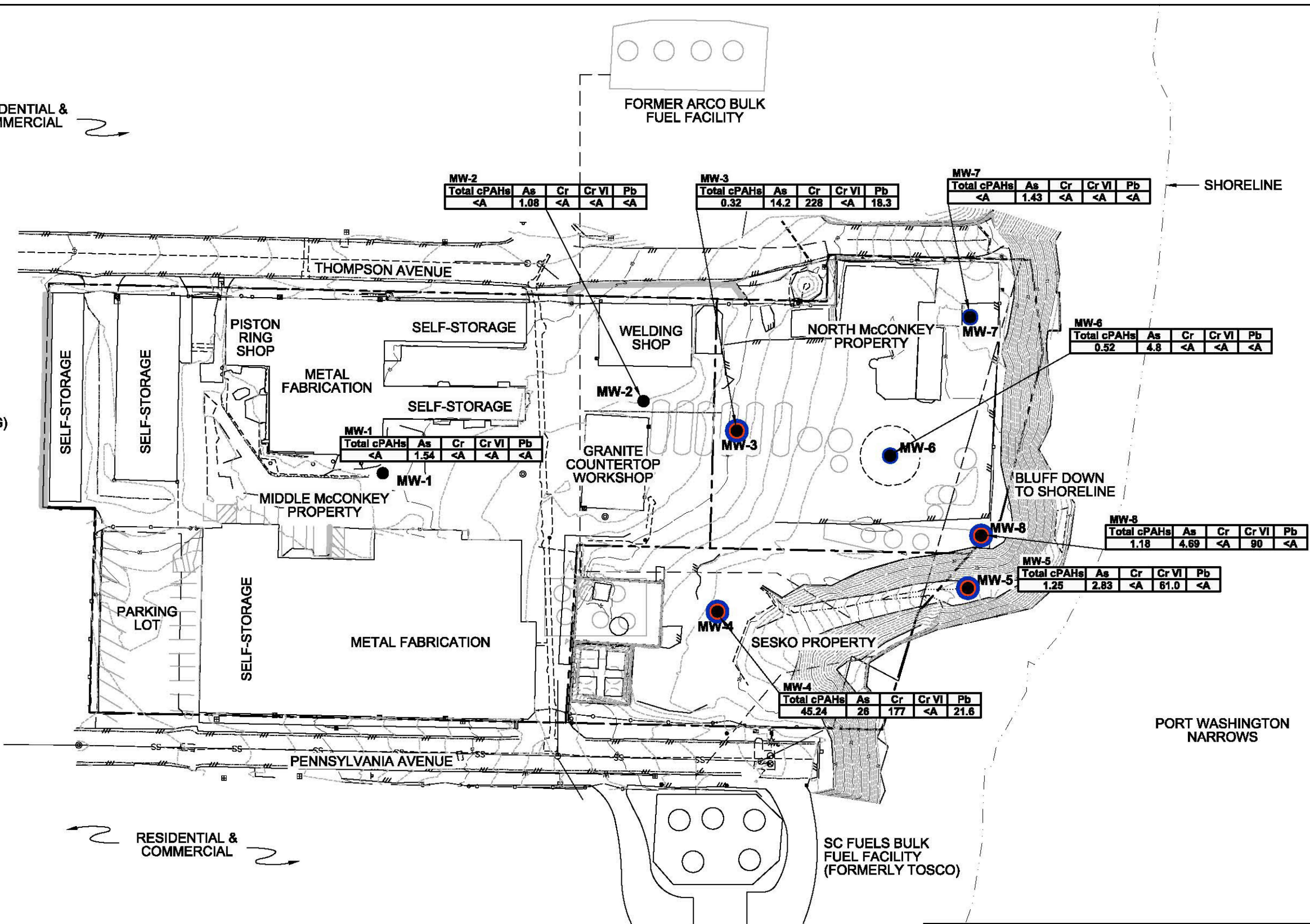
○ Exceeds MTCA Cleanup Level for metals

○ Exceeds MTCA Cleanup Level for CPAHs

**Notes:**

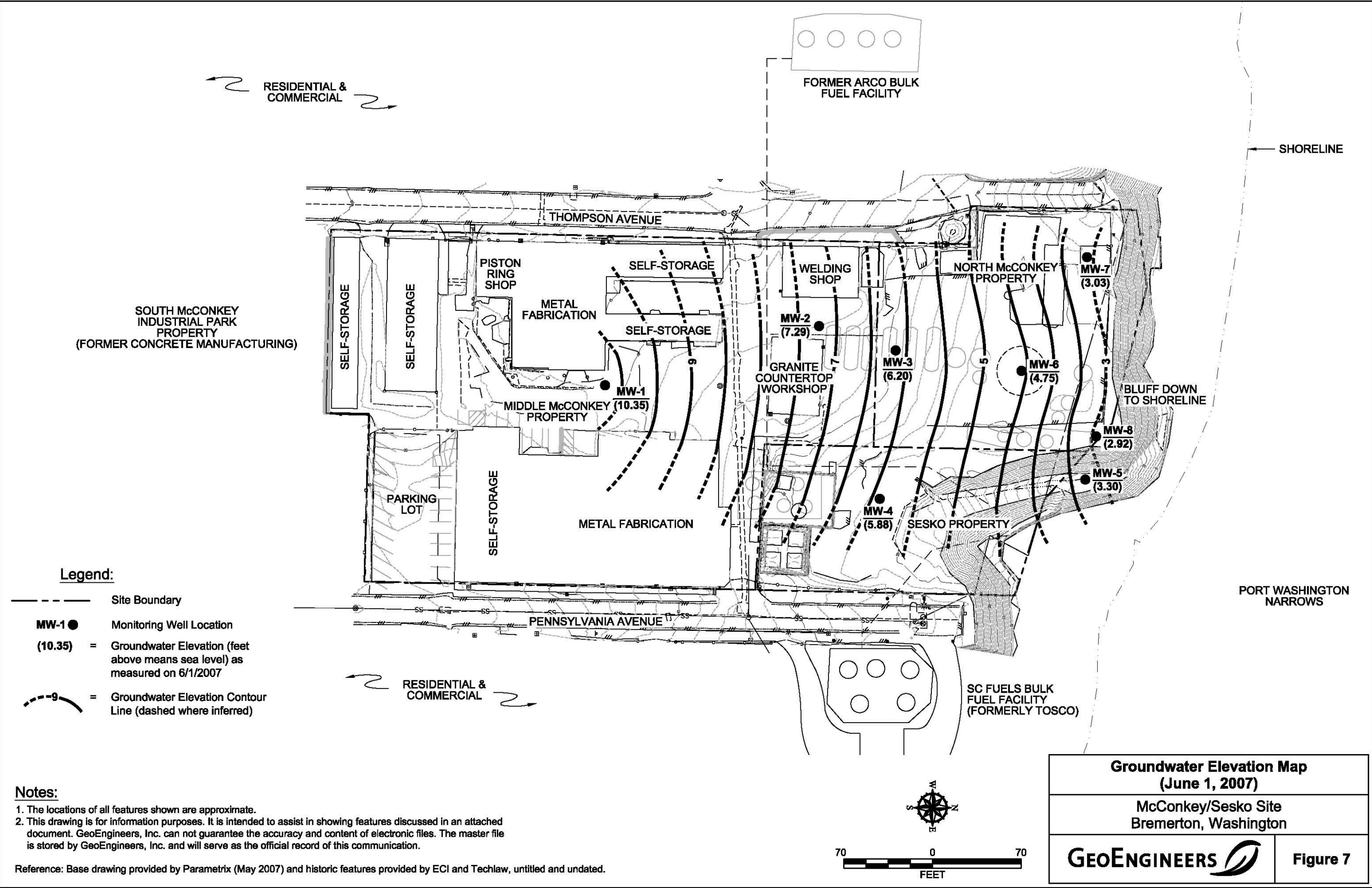
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: Base drawing provided by Parametrix (May 2007) and historic features provided by ECI and Techlaw, untitled and undated.



<b>Summary of cPAH and Dissolved Metals Data for Groundwater</b>	
McConkey/Sesko Site Bremerton, Washington	
<b>GEOENGINEERS</b>	<b>Figure 6</b>

W:\SEATTLE\PROJECTS\108920\100\CAD\08920\700-FIGURES.DWG(TAB:F7 MODIFIED BY BKARN ON SEP 20, 2007 - 14:23







## ***APPENDIX A*** ***FIELD PROCEDURES***

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## APPENDIX A FIELD PROCEDURES

### GENERAL

Subsurface conditions at the property were explored by completing eight soil borings and constructing groundwater monitoring wells in these borings using hollow-stem auger drilling equipment. Drilling services were provided by Cascade Drilling, Inc. of Bothell, Washington. A representative from our staff selected the exploration locations, examined and classified the soils encountered, and prepared a detailed log of each exploration. Soils encountered were visually classified in general accordance with ASTM D-2488-94, which is described in Figure A-1. The boring logs are presented in Figures A-2 through A-9.

### *Drilling and Soil Sampling*

The soil borings were completed to depths ranging from approximately 20 to 45 feet bgs. The sampling equipment was decontaminated before each sampling attempt with a Liqui-Nox® solution wash and a distilled water rinse. Soil samples were obtained at 5-foot depth intervals for field screening.

Soil samples obtained from the borings were collected from the sampler with a stainless steel knife or new gloves. The sampler was driven a maximum of 48 inches using a pneumatic hammer. A portion of each sample was placed in a laboratory-prepared sample jar for potential chemical analysis. The sample containers were completely filled to minimize headspace. The remaining portion of each sample was used for field screening. The sampling equipment was decontaminated prior to each use with a Liqui-Nox® soap solution, a tap water initial rinse and a distilled water final rinse.

At least two samples from each boring were selected for chemical analysis based on field screening results and/or the sample location relative to potential sources of contamination. The soil samples were placed in a cooler with ice for transport to the laboratory. Standard chain-of-custody procedures were followed in transporting the soil samples to the laboratory.

### FIELD SCREENING OF SOIL SAMPLES

Soil samples obtained from the borings were screened in the field for evidence of contamination using (1) visual examination; (2) sheen screening; and (3) headspace vapor screening with a photo-ionization detector (PID). The results of headspace and sheen screening are included in the boring logs and in Table 1 for soil samples tested by chemical analysis.

Visual screening consists of inspecting the soil for stains indicative of petroleum-related contamination. Visual screening is generally more effective when contamination is related to heavy petroleum hydrocarbons, such as motor oil or hydraulic oil, or when hydrocarbon concentrations are high. Sheen screening and headspace vapor screening are more sensitive methods that have been effective in detecting contamination at concentrations less than regulatory cleanup guidelines.

Sheen screening involves placing soil in a pan of water and observing the water surface for signs of sheen. Sheen classifications are as follows:

No Sheen (NS)	No visible sheen on water surface.
Slight Sheen (SS)	Light, colorless, dull sheen; spread is irregular, not rapid; sheen dissipates rapidly.

Moderate Sheen (MS)	Light to heavy sheen, may have some color/iridescence; spread is irregular to flowing; few remaining areas of no sheen on water surface.
Heavy Sheen (HS)	Heavy sheen with color/iridescence; spread is rapid; entire water surface may be covered with sheen.

Headspace vapor screening involves placing a soil sample in a plastic sample bag. Air is captured in the bag and the bag is shaken to expose the soil to the air trapped in the bag. The probe of a PID is inserted in the bag and the instrument measures the concentration of combustible vapor in the air removed from the sample headspace. The PID measures concentrations in ppm but is calibrated with to isobutylene. The PID is designed to quantify combustible gas and organic vapor concentrations in the range between 100 2,500 ppm. Field screening results are site-specific and vary with soil type, soil moisture content, temperature and type of contaminant.

### GROUNDWATER SAMPLE COLLECTION

Groundwater samples were obtained from monitoring wells MW-1 through MW-8 using low-flow groundwater sampling methods. New downhole polyethylene tubing and a peristaltic pump were used to obtain the water samples. Prior to sample collection, each monitoring well was purged until consistent values (i.e., less than 10% variance between consecutive readings) were obtained for pH, temperature, dissolved oxygen, and conductivity. The water samples were transferred to clean laboratory-prepared containers provided by the analytical laboratory. Laboratory prepared bottles were completely filled to eliminate headspace and were kept cool during transport to the testing laboratory. Chain-of-custody procedures were observed during transport of the samples to the testing laboratory.

Date(s) Drilled	05/21/07	Logged By	MSL	Checked By	MSL
Drilling Contractor	Cascade Drilling	Drilling Method	HSA	Sampling Methods	Dames & Moore
Auger Data	4¼-inch ID	Hammer Data	300 lb hammer/30 in drop	Drilling Equipment	CME 75
Total Depth (ft)	46.5	Surface Elevation (ft)	45.03	Groundwater Elevation (ft)	7.03
Vertical Datum		Datum/System	NAVD88	Easting(x): Northing(y):	

Elevation feet	SAMPLES					Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Sheen	Headspace Vapor PID (ppb)	NOTES
	Interval	Recovered (in)	Blows/foot	Sub-Sample Number	Testing							
45	0							AS	Asphalt			
								ML	Brown silt with fine sand and fine gravel (loose, wet) (fill)			
40	5	18	30	1	CA			ML	Brown silt with fine sand (very stiff, moist) (fill)	NS	0.0	
35	10	18	48	2				SM	Brown silty fine to medium sand (very dense, moist)	NS	42.9	
30	15	18	65	3						NS	17.3	
25	20	18	44	4				SM	Brown silty fine to medium sand (very dense, moist)	NS-SS	26.0	
20	25	18	72	5				SP-SM	Brown fine to medium sand with silt (very dense, moist)	NS	42.3	
30												

Note: See Figure A-1 for explanation of symbols.

### LOG OF MONITORING WELL MW-1



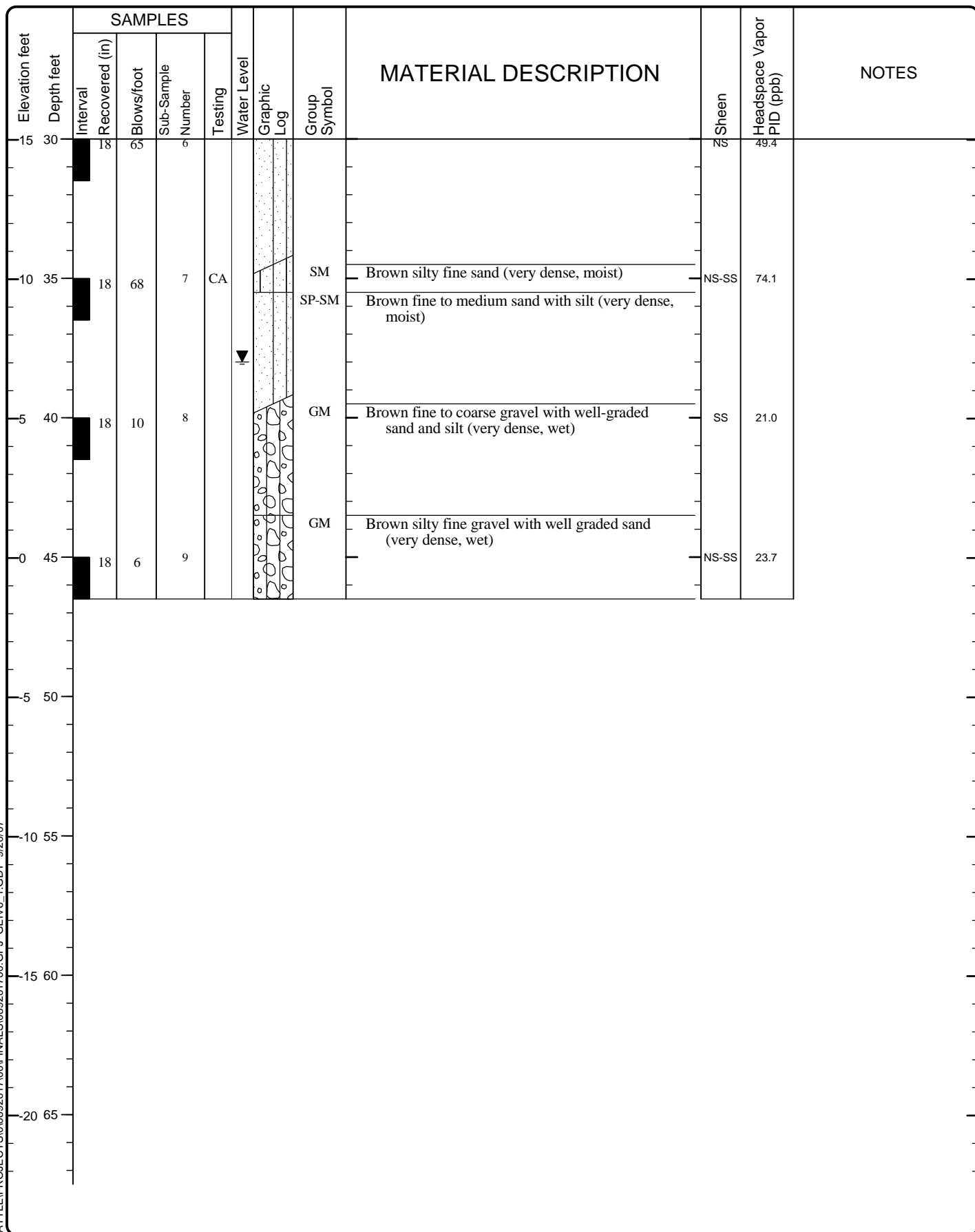
Project: McConkey/Sesko  
Project Location: Bremerton, Washington  
Project Number: 0892-017-00

Figure A-2  
Sheet 1 of 2

V6-ENVBORING W:\SEATTLE\PROJECTS\0892\1700\FINAL\S089201700.GPJ GEI\6\_1.GDT 9/20/07



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### LOG OF MONITORING WELL MW-1 (continued)



Project: McConkey/Sesko  
 Project Location: Bremerton, Washington  
 Project Number: 0892-017-00

Figure A-2  
 Sheet 2 of 2

Date(s) Drilled	05/21/07	Logged By	MSL	Checked By	MSL
Drilling Contractor	Cascade Drilling	Drilling Method	HSA	Sampling Methods	Dames & Moore
Auger Data	4¼-inch ID	Hammer Data	300 lb hammer/30 in drop	Drilling Equipment	CME 75
Total Depth (ft)	46.5	Surface Elevation (ft)	42.54	Groundwater Elevation (ft)	4.54
Vertical Datum		Datum/System	NAVD88	Easting(x): Northing(y):	

Elevation feet	SAMPLES					Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Sheen	Headspace Vapor PID (ppb)	NOTES
	Interval	Recovered (in)	Blows/foot	Sub-Sample Number	Testing							
0								AS	Asphalt			
								ML	Gray to brown silt with fine sand and trace gravel (stiff, moist) (fill)			
40												
5		18	13	1	CA					SS	81.8	Creosote-like odor
35												
10		18	15	2				SM	Brown silty fine to medium sand (medium dense, moist) (fill)	MS	13.6	Black staining; creosote-like odor
								SM	Light brown silty fine sand with trace coarse gravel (medium dense, moist) (fill)			
30												
15		18	45	3				SM	Brown silty fine to medium sand (dense, moist)	NS-SS	9.1	
25												
20		18	52	4					Becomes very dense	NS	19.4	
20												
25		18	65	5	CA					NS	18.3	
15												
30								GM	Brown well-graded silty gravel with sand (very dense, moist)			

Note: See Figure A-1 for explanation of symbols.

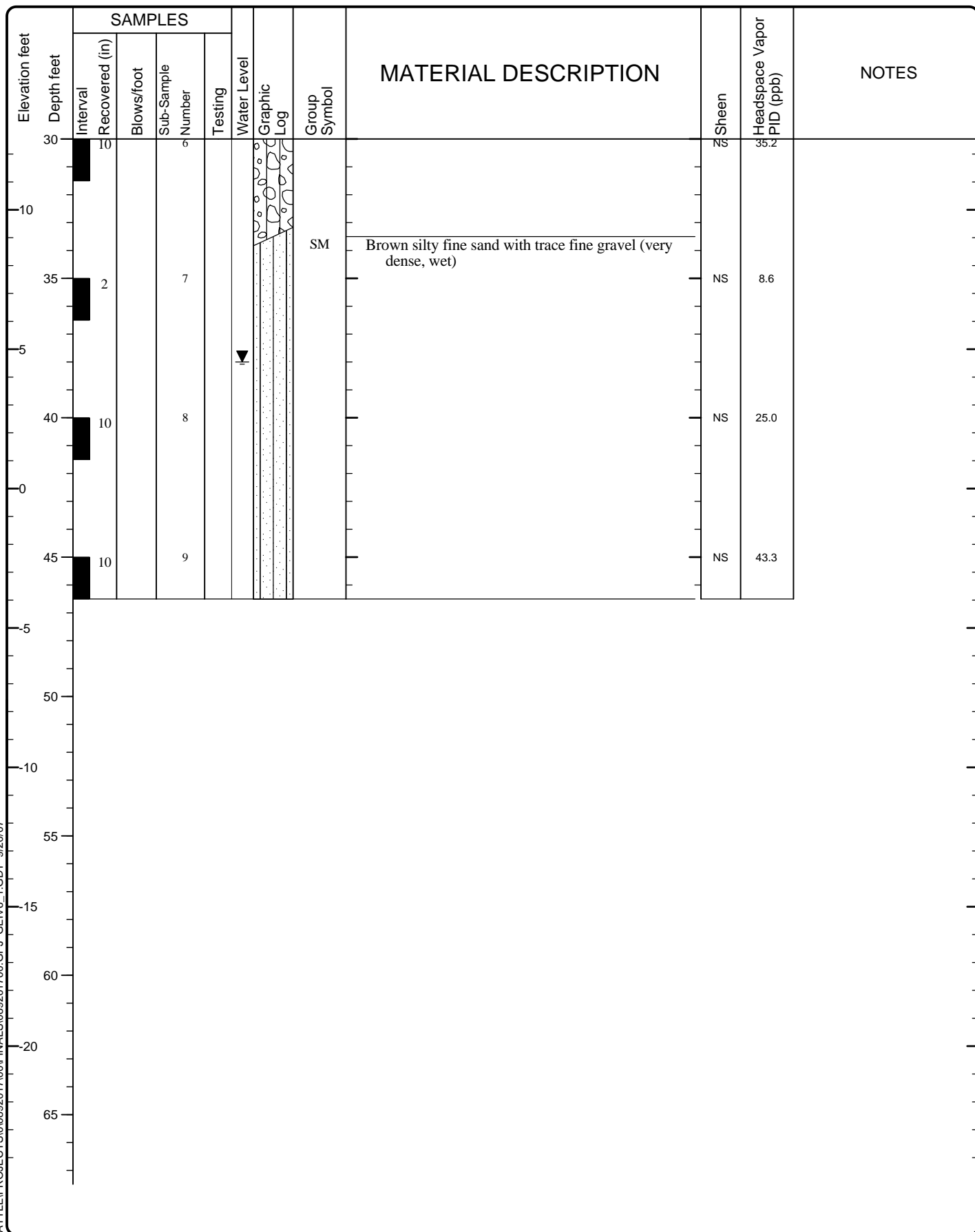
### LOG OF MONITORING WELL MW-2



Project: McConkey/Sesko  
Project Location: Bremerton, Washington  
Project Number: 0892-017-00

Figure A-3  
Sheet 1 of 2

V6-ENVBORING W:\SEATTLE\PROJECTS\089201700\FINAL\089201700.GPJ GEIV6-1.GDT 9/20/07



### LOG OF MONITORING WELL MW-2 (continued)



Project: McConkey/Sesko  
 Project Location: Bremerton, Washington  
 Project Number: 0892-017-00

Figure A-3  
 Sheet 2 of 2

Date(s) Drilled	05/22/07	Logged By	MSL	Checked By	MSL
Drilling Contractor	Cascade Drilling	Drilling Method	HSA	Sampling Methods	Dames & Moore
Auger Data	4¼-inch ID	Hammer Data	300 lb hammer/30 in drop	Drilling Equipment	CME 75
Total Depth (ft)	46.5	Surface Elevation (ft)	39.10	Groundwater Elevation (ft)	4.1
Vertical Datum		Datum/System	NAVD88	Easting(x): Northing(y):	

Elevation feet	SAMPLES					Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Sheen	Headspace Vapor PID (ppb)	NOTES
	Interval	Recovered (in)	Blows/foot	Sub-Sample Number	Testing							
0								AS	Asphalt			
								SM	Brown silty fine to medium sand with occasional gravel (dense, moist) (fill)			
35												
5	18	25	1	CA				ML	Gray silt with fine sand and occasional gravel (very stiff, moist) (fill)	SS	>2,000	Dark staining creosote-like/solvent odor
30												
10	18	48	2					SM	Brown silty fine to medium sand (very dense, moist)	SS-NS	469	Dark staining
								MH	Brown silt with fine to medium sand (hard, moist)			
25												
15	18	45	3					SM	Brown silty fine to medium sand with occasional gravel (very dense, moist)	NS-SS	32.1	
20												
20	18	52	4							NS	903	
15												
25	18	62	5	CA				SP-SM	Gray fine to medium sand with silt (very dense, moist)	NS	>2,000	
30												
								SM	Gray silty fine to medium sand (very dense, moist)			

Note: See Figure A-1 for explanation of symbols.

## LOG OF MONITORING WELL MW-3

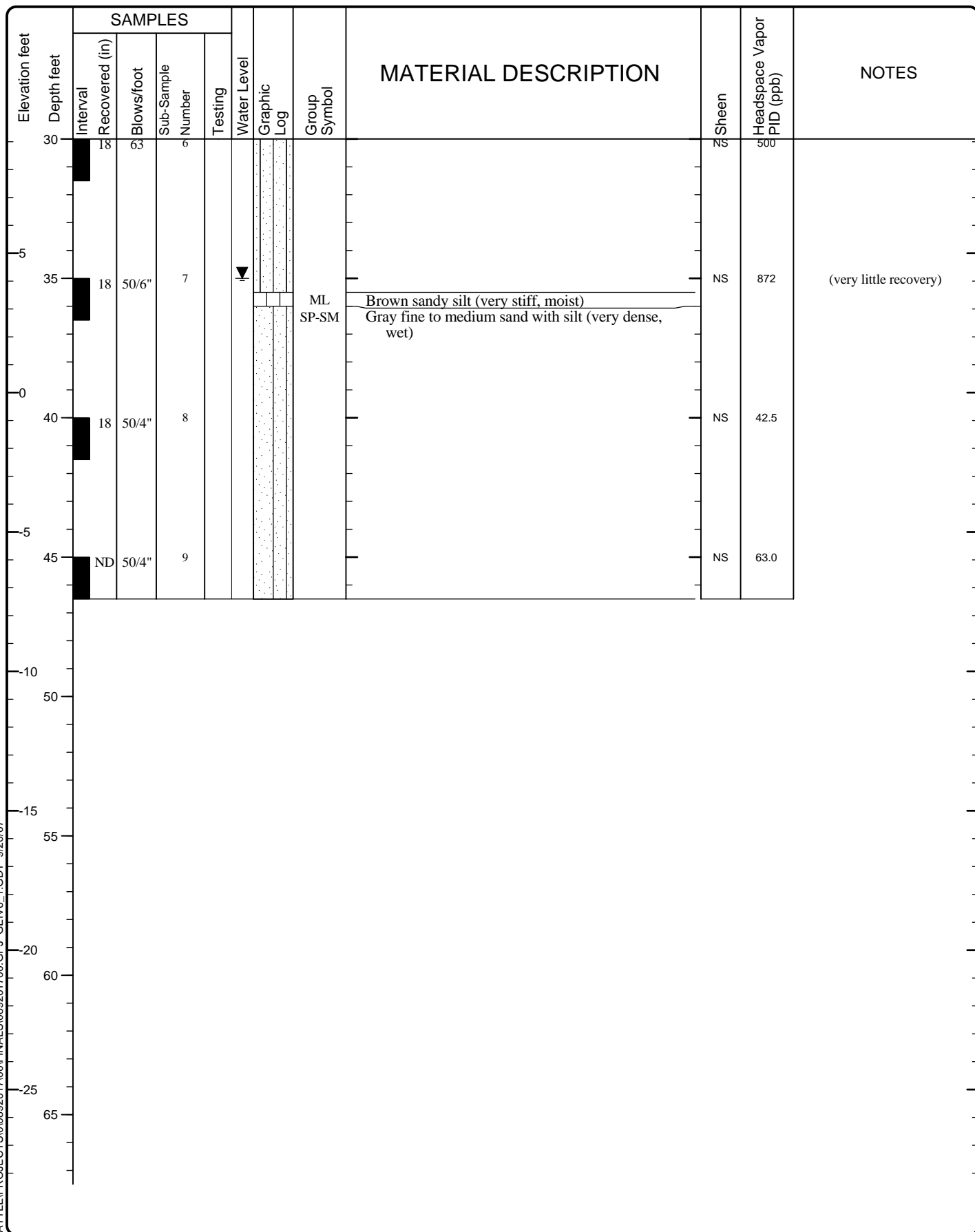


Project: McConkey/Sesko  
Project Location: Bremerton, Washington  
Project Number: 0892-017-00

Figure A-4  
Sheet 1 of 2

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### LOG OF MONITORING WELL MW-3 (continued)

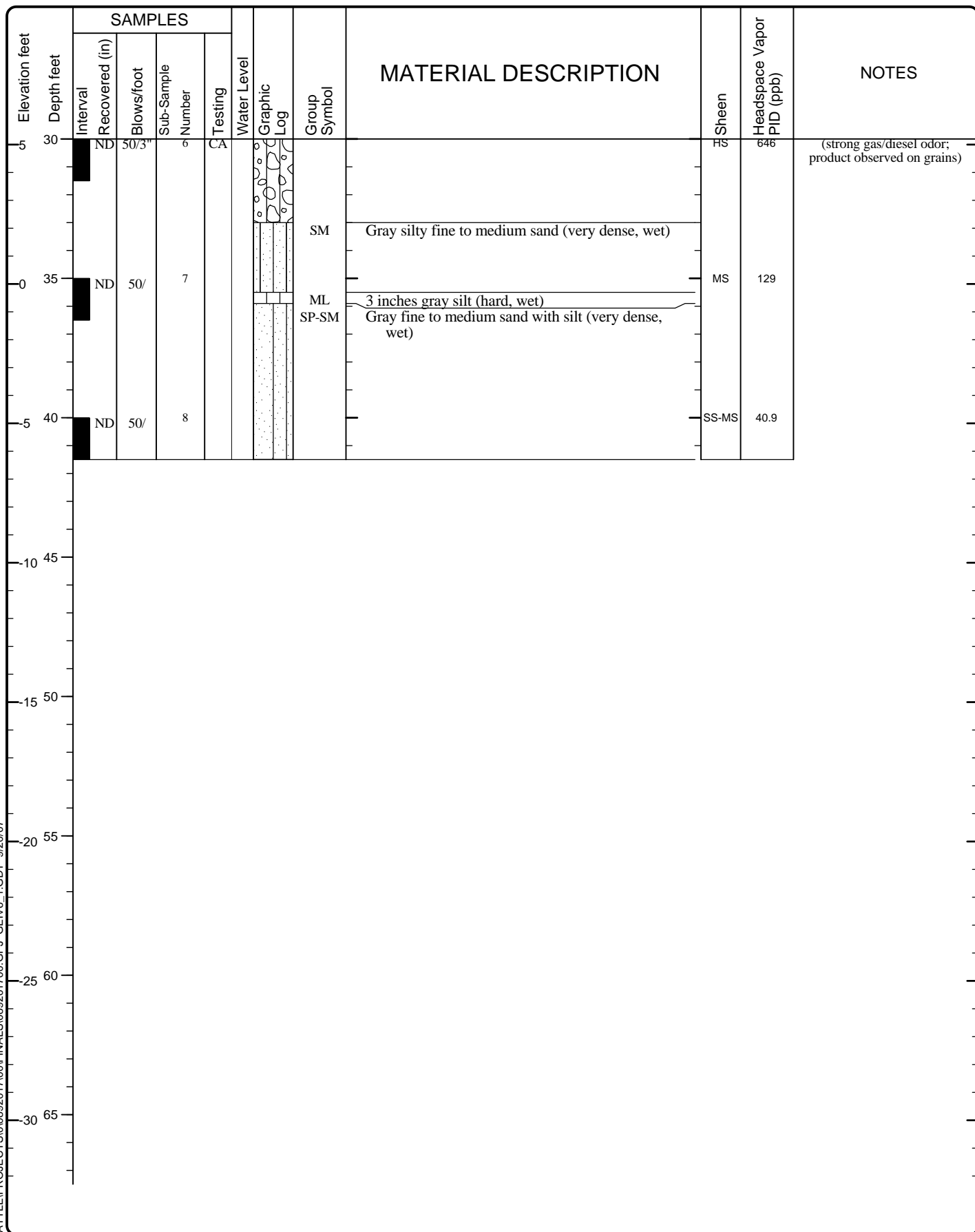


Project: McConkey/Sesko  
 Project Location: Bremerton, Washington  
 Project Number: 0892-017-00

Figure A-4  
 Sheet 2 of 2



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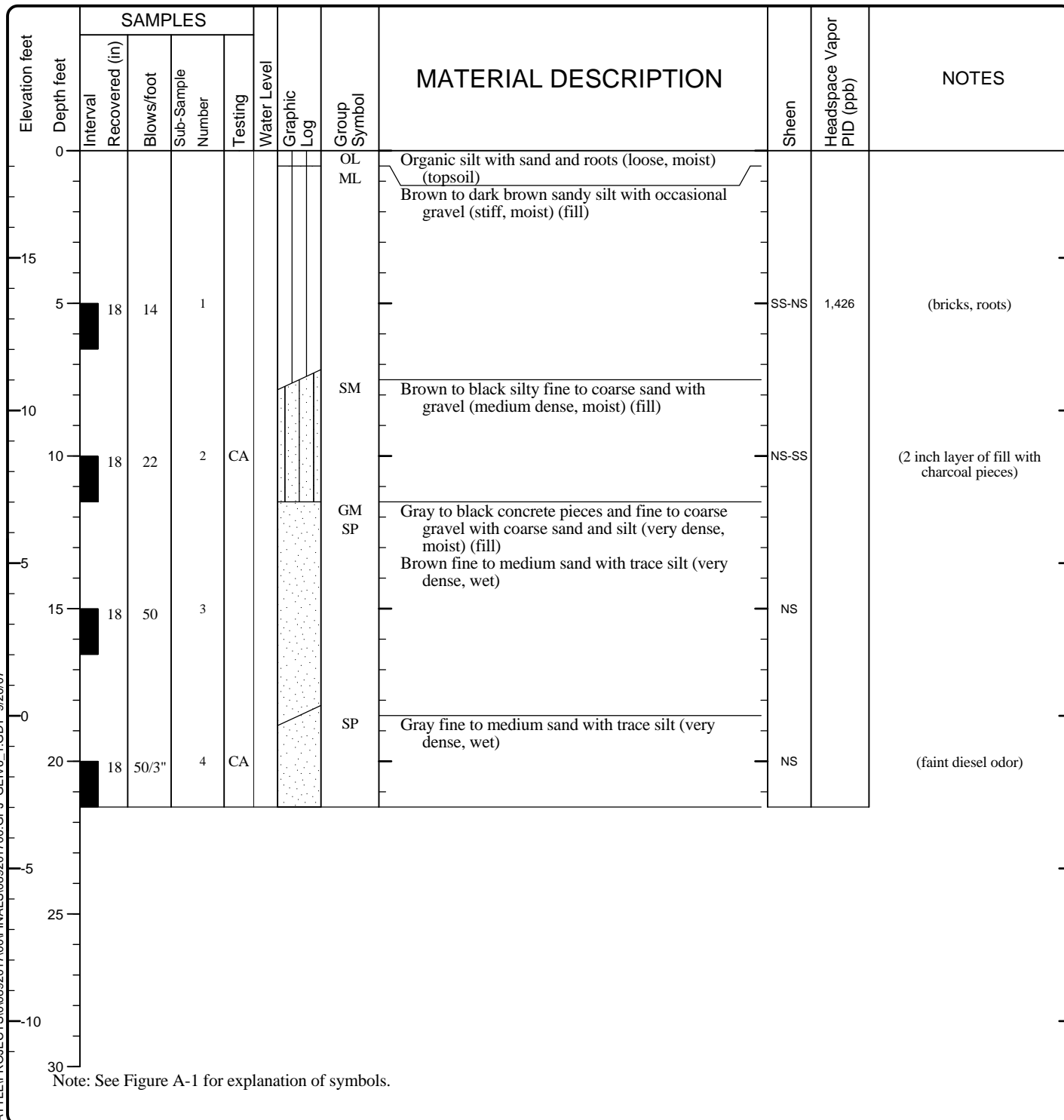
### LOG OF MONITORING WELL MW-4 (continued)



Project: McConkey/Sesko  
 Project Location: Bremerton, Washington  
 Project Number: 0892-017-00

Figure A-5  
 Sheet 2 of 2

Date(s) Drilled	05/24/07	Logged By	MSL	Checked By	MSL
Drilling Contractor	Cascade Drilling	Drilling Method	HSA	Sampling Methods	Dames & Moore
Auger Data	4¼-inch ID	Hammer Data	300 lb hammer/30 in drop	Drilling Equipment	CME 75
Total Depth (ft)	21.5	Surface Elevation (ft)	18.51	Groundwater Elevation (ft)	Not Encountered
Vertical Datum		Datum/System	NAVD88	Easting(x): Northing(y):	



### LOG OF MONITORING WELL MW-5



Project: McConkey/Sesko  
 Project Location: Bremerton, Washington  
 Project Number: 0892-017-00

Figure A-6  
 Sheet 1 of 1

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Date(s) Drilled	05/22/07	Logged By	MSL	Checked By	MSL
Drilling Contractor	Cascade Drilling	Drilling Method	HSA	Sampling Methods	Dames & Moore
Auger Data	4¼-inch ID	Hammer Data	300 lb hammer/30 in drop	Drilling Equipment	CME 75
Total Depth (ft)	36.5	Surface Elevation (ft)	34.95	Groundwater Elevation (ft)	7.95
Vertical Datum		Datum/System	NAVD88	Easting(x): Northing(y):	

Elevation feet	SAMPLES					Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Sheen	Headspace Vapor PID (ppb)	NOTES
	Interval	Recovered (in)	Blows/foot	Sub-Sample Number	Testing							
0								AC	Concrete			
								CR	Crushed rock mixed with treated wood			
								SM	Brown silty fine to medium sand (dense, moist)			Creosote-like odor and black tar-like substance
-30	5	18	32	1	CA			ML	Brown sandy silt (very stiff, moist)	NS	>2,000	
-25	10	18	50	2	CA			SM	Dark brown to black silty fine to medium sand (very dense, moist)	SS-MS	186	Black staining
-20	15	18	50	3				SM	Brown silty fine to medium sand (very dense, moist)	SS-MS	151	Sheen with dark black creosote-like staining
-15	20	18	50	4				ML	Brown to gray interbedded sandy silt with trace gravel (very stiff, moist)	NS-SS	28.0	
-10	25	14	50/4"	5				GM	Light brown fine to coarse gravel with silt and sand (very dense, moist)	NS-SS	108	(diesel odor)
								ML	Brown sandy silt with gravel (hard, moist)			
-5	30							SM	Gray fine to medium silty sand (very dense, wet)			

Note: See Figure A-1 for explanation of symbols.

### LOG OF MONITORING WELL MW-6

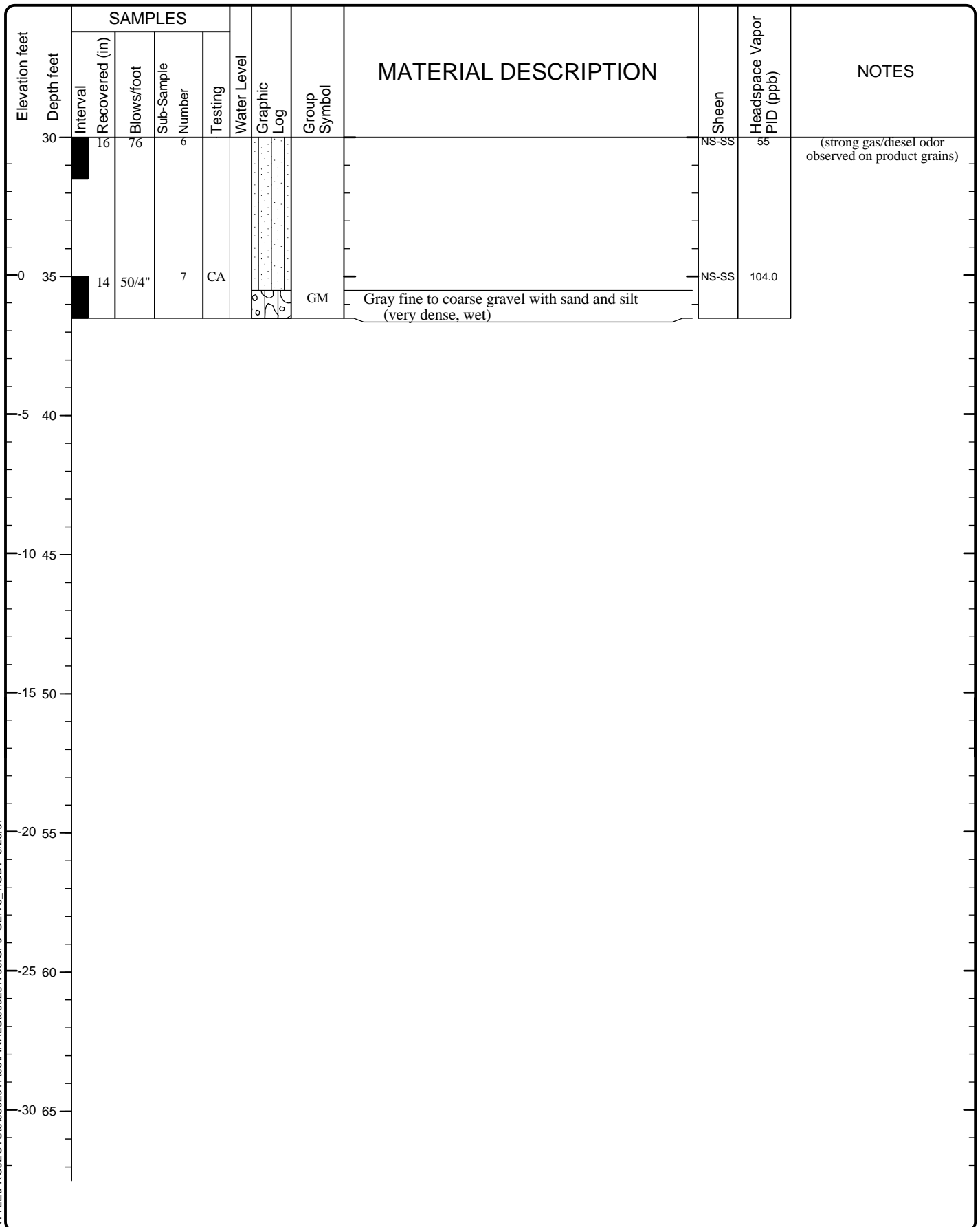


Project: McConkey/Sesko  
Project Location: Bremerton, Washington  
Project Number: 0892-017-00

Figure A-7  
Sheet 1 of 2

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V6\_ENVBORING W:\SEATTLE\PROJECTS\089201700\FINAL\089201700.GPJ GEIV6.1.GDT 9/20/07



### LOG OF MONITORING WELL MW-6 (continued)



Project: McConkey/Sesko  
 Project Location: Bremerton, Washington  
 Project Number: 0892-017-00

Figure A-7  
 Sheet 2 of 2

Date(s) Drilled	05/23/07	Logged By	MSL	Checked By	MSL
Drilling Contractor	Cascade Drilling	Drilling Method	HSA	Sampling Methods	Dames & Moore
Auger Data	4¼-inch ID	Hammer Data	300 lb hammer/30 in drop	Drilling Equipment	CME 75
Total Depth (ft)	36.5	Surface Elevation (ft)	33.24	Groundwater Elevation (ft)	6.24
Vertical Datum		Datum/System	NAVD88	Easting(x): Northing(y):	

Elevation feet	SAMPLES					Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Sheen	Headspace Vapor PID (ppb)	NOTES
	Interval	Recovered (in)	Blows/foot	Sub-Sample Number	Testing							
0								AS GM	Asphalt Dark brown silty fine gravel with sand (loose, moist) (fill)			
5	18	21	1	CA				ML SM	Brown sandy silt with occasional gravel (stiff, moist) Brown silty fine to medium sand with trace gravel (dense, moist)	SS	183	(strong odor-coal pieces throughout)
10	8	27	2					ML	Brown sandy silt with trace coarse gravel (very stiff, moist) (fill)	NS	15.7	
15	18	43	3					SM	Brown silty fine to medium sand with occasional fine gravel (very dense, moist)	SS	601	
20	18	63	4					SP-SM	Gray fine to medium sand with silt (very dense, moist)	SS	1,086	
25	18	48	5	CA				ML	Brown silt with fine sand (very stiff, moist)	HS	328	(very strong diesel odor)
30								GM	Brown silty well-graded gravel with sand (very dense, wet)			

Note: See Figure A-1 for explanation of symbols.

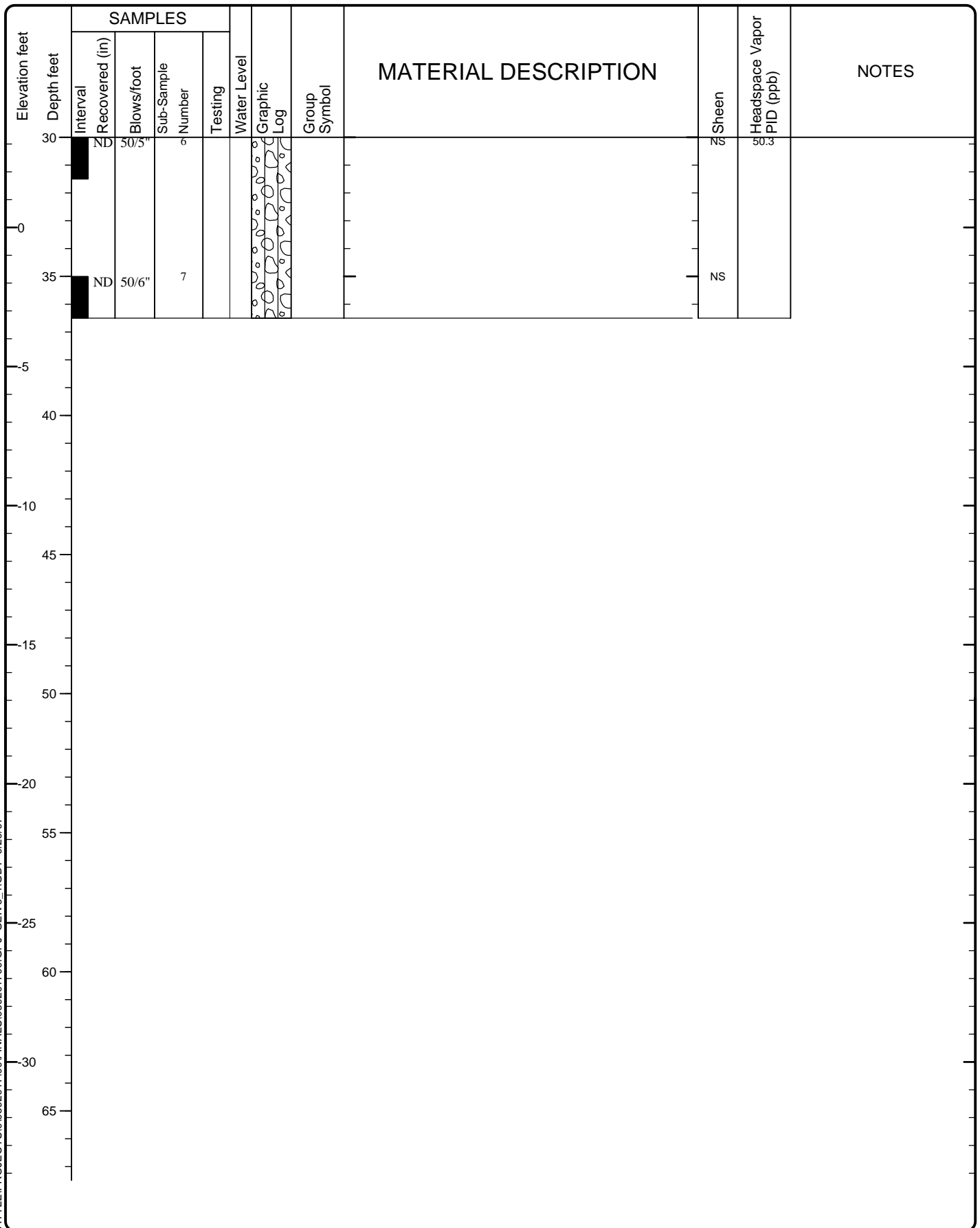
## LOG OF MONITORING WELL MW-7



Project: McConkey/Sesko  
Project Location: Bremerton, Washington  
Project Number: 0892-017-00

Figure A-8  
Sheet 1 of 2

V6-ENVBORING W:\SEATTLE\PROJECTS\089201700\FINAL\089201700.GPJ GEIV6-1.GDT 9/20/07



### LOG OF MONITORING WELL MW-7 (continued)



Project: McConkey/Sesko  
 Project Location: Bremerton, Washington  
 Project Number: 0892-017-00

Figure A-8  
 Sheet 2 of 2

Date(s) Drilled	05/22/07	Logged By	MSL	Checked By	MSL
Drilling Contractor	Cascade Drilling	Drilling Method	HSA	Sampling Methods	Dames & Moore
Auger Data	4¼-inch ID	Hammer Data	300 lb hammer/30 in drop	Drilling Equipment	CME 75
Total Depth (ft)	41.5	Surface Elevation (ft)	35.56	Groundwater Elevation (ft)	6.56
Vertical Datum		Datum/System	NAVD88	Easting(x): Northing(y):	

Elevation feet	SAMPLES					Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Sheen	Headspace Vapor PID (ppb)	NOTES
	Interval	Recovered (in)	Blows/foot	Sub-Sample Number	Testing							
0								OL	Organic top soil (loose, moist)			
35								SM	Light brown silty fine to medium sand with gravel (medium dense, moist) (fill)			
5	18	11	1					SM	Dark brown silty fine to medium sand with gravel (medium dense, moist) (fill)	SS	4.0	
30												
10	18	5	2	CA						SS	10.1	(pieces of charcoal)
25												
15	18	16	3					SM	Brown silty fine to medium sand with gravel (dense, moist) (fill)	SS	14.7	(pieces of charcoal)
20												
20	18	20	4					SM	Brown silty well-graded sand with occasional gravel (very dense, moist)	SS	17.6	
15												
25	18	70	5	CA				ML	Gray to brown mottled silt with fine sand (hard, moist)	SS	22.0	
10												
30								GM	Gray silty well-graded gravel with fine to coarse sand (very dense, wet)	NS-SS		

Note: See Figure A-1 for explanation of symbols.

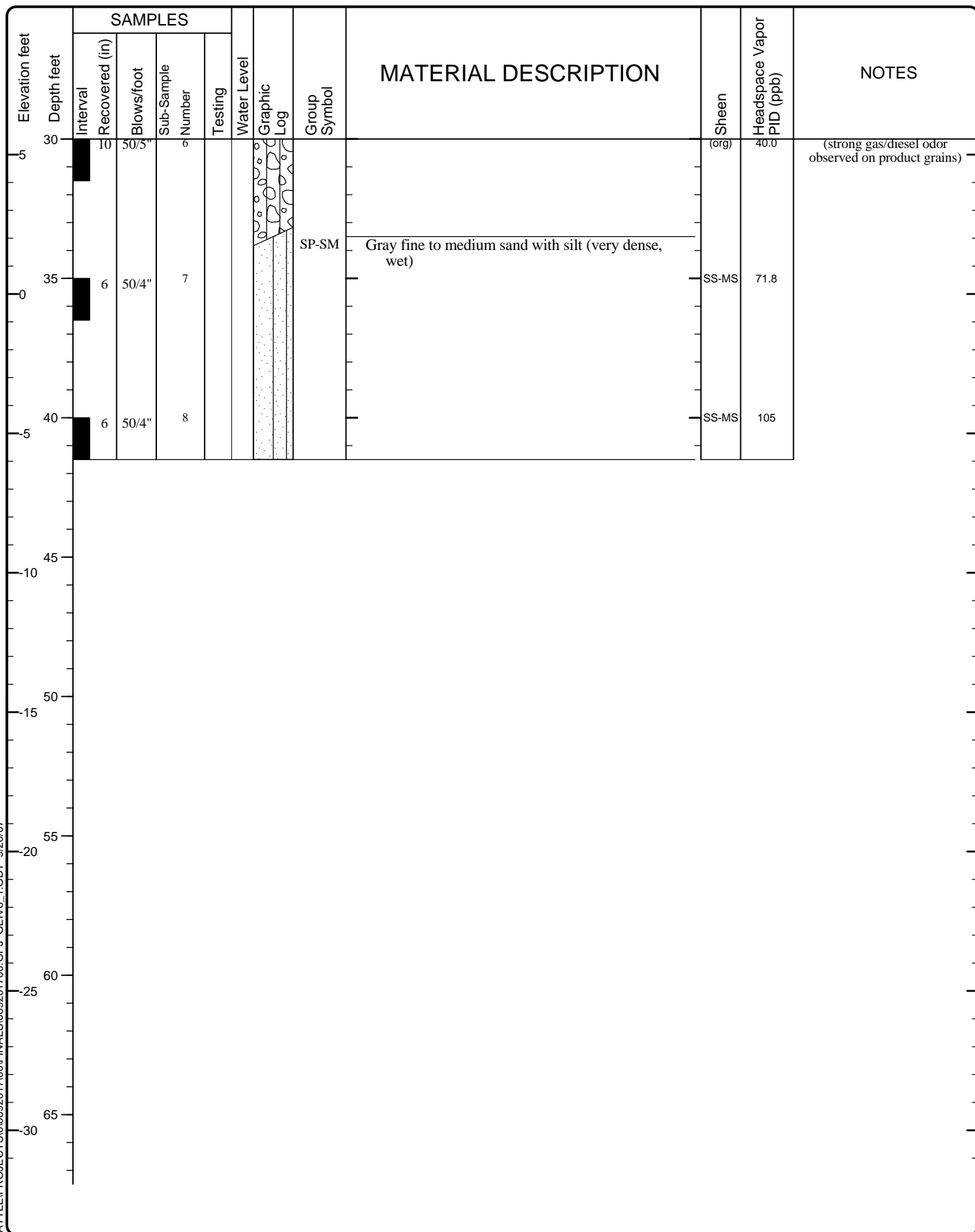
## LOG OF MONITORING WELL MW-8



Project: McConkey/Sesko  
Project Location: Bremerton, Washington  
Project Number: 0892-017-00

Figure A-9  
Sheet 1 of 2

V6-ENVBORING W:\SEATTLE\PROJECTS\089201700\FINAL\089201700.GPJ GEIV6.1.GDT 9/20/07



### LOG OF MONITORING WELL MW-8 (continued)



Project: McConkey/Sesko  
 Project Location: Bremerton, Washington  
 Project Number: 0892-017-00

Figure A-9  
 Sheet 2 of 2



## ***APPENDIX B*** ***CHEMICAL ANALYTICAL DATA***

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## **APPENDIX B CHEMICAL ANALYTICAL DATA**

### **SAMPLES**

Chain-of-custody procedures were followed during the transport of the field samples to the accredited analytical laboratory. The samples were held in cold storage pending extraction and/or analysis. The analytical results and quality control records are included in this attachment.

### **ANALYTICAL DATA REVIEW**

The laboratory maintains an internal quality assurance program as documented in its laboratory quality assurance manual. The laboratory uses a combination of blanks, surrogate recoveries, duplicates, matrix spike recoveries, matrix spike duplicate recoveries, blank spike recoveries and blank spike duplicate recoveries to evaluate the analytical results. The laboratory also uses data quality goals for individual chemicals or groups of chemicals based on the long-term performance of the test methods. The data quality goals were included in the laboratory reports. The laboratory compared each group of samples with the existing data quality goals and noted any exceptions in the laboratory report. Any data quality exceptions documented by the accredited laboratory were reviewed by GeoEngineers and are addressed in the data quality exception section of this attachment.

### **DATA QUALITY EXCEPTION SUMMARY**

No significant data quality exceptions were noted in the laboratory report or during our review. Based on the data quality review, it is our opinion that the analytical data are of acceptable quality for their intended use in this report.





## ***APPENDIX C*** ***REPORT LIMITATIONS AND GUIDELINES FOR USE***

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## **APPENDIX C REPORT LIMITATIONS AND GUIDELINES FOR USE<sup>1</sup>**

This Appendix provides information to help you manage your risks with respect to the use of this report.

### **ENVIRONMENTAL SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES, PERSONS AND PROJECTS**

This report has been prepared for the exclusive use of the City of Bremerton, their authorized agents and regulatory agencies. This report is not intended for use by others, and the information contained herein is not applicable to other sites.

GeoEngineers structures our services to meet the specific needs of our clients. For example, an environmental site assessment study conducted for a property owner may not fulfill the needs of a prospective purchaser of the same property. Because each environmental study is unique, each environmental report is unique, prepared solely for the specific client and project site. No one except the City of Bremerton should rely on this environmental report without first conferring with GeoEngineers. This report should not be applied for any purpose or project except the one originally contemplated.

### **THIS ENVIRONMENTAL REPORT IS BASED ON A UNIQUE SET OF PROJECT-SPECIFIC FACTORS**

This report has been prepared for the City of Bremerton. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, do not rely on this report if it was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

If important changes are made after the date of this report, GeoEngineers should be given the opportunity to review our interpretations and recommendations and provide written modifications or confirmation, as appropriate.

### **RELIANCE CONDITIONS FOR THIRD PARTIES**

Our report was prepared for the exclusive use of our Client. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. This is to provide our firm with reasonable protection against open-ended liability claims by third parties with whom there would otherwise be no contractual limits to their actions. Within the limitations of scope, schedule and budget, our services have been executed in accordance with our Agreement with the Client and generally accepted environmental practices in this area at the time this report was prepared.

### **ENVIRONMENTAL REGULATIONS ARE ALWAYS EVOLVING**

Some substances may be present in the site vicinity in quantities or under conditions that may have led, or may lead, to contamination of the subject site, but are not included in current local, state or federal

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<sup>1</sup> Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; [www.asfe.org](http://www.asfe.org).

regulatory definitions of hazardous substances or do not otherwise present current potential liability. GeoEngineers cannot be responsible if the standards for appropriate inquiry, or regulatory definitions of hazardous substance, change or if more stringent environmental standards are developed in the future.

### **UNCERTAINTY MAY REMAIN EVEN AFTER THIS PHASE II ESA IS COMPLETED**

No ESA can wholly eliminate uncertainty regarding the potential for contamination in connection with a property. Our interpretation of subsurface conditions in this study is based on field observations and chemical analytical data from widely-spaced sampling locations. It is always possible that contamination exists in areas that were not explored, sampled or analyzed.

### **SUBSURFACE CONDITIONS CAN CHANGE**

This environmental report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by manmade events such as construction on or adjacent to the site, by new releases of hazardous substances, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. Always contact GeoEngineers before applying this report to determine if it is still applicable.

### **SOIL AND GROUNDWATER END USE**

The cleanup levels referenced in this report are site- and situation-specific. The cleanup levels may not be applicable for other sites or for other on-site uses of the affected media (soil and/or groundwater). Note that hazardous substances may be present in some of the site soil and/or groundwater at detectable concentrations that are less than the referenced cleanup levels. GeoEngineers should be contacted prior to the export of soil or groundwater from the subject site or reuse of the affected media on site to evaluate the potential for associated environmental liabilities. We cannot be responsible for potential environmental liability arising out of the transfer of soil and/or groundwater from the subject site to another location or its reuse on site in instances that we were not aware of or could not control.

### **MOST ENVIRONMENTAL FINDINGS ARE PROFESSIONAL OPINIONS**

Our interpretations of subsurface conditions are based on field observations and chemical analytical data from widely spaced sampling locations at the site. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoEngineers reviewed field and laboratory data and then applied our professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ – sometimes significantly – from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

### **DO NOT REDRAW THE EXPLORATION LOGS**

Environmental scientists prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in an environmental report should never be redrawn for inclusion in other design drawings. Only photographic or electronic reproduction is acceptable, but recognize that separating logs from the report can elevate risk.

**READ THESE PROVISIONS CLOSELY**

Some clients, design professionals and contractors may not recognize that the geoscience practices (geotechnical engineering, geology and environmental science) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic expectations that could lead to disappointments, claims and disputes. GeoEngineers includes these explanatory “limitations” provisions in our reports to help reduce such risks. Please confer with GeoEngineers if you are unclear how these “Report Limitations and Guidelines for Use” apply to your project or site.

**GEOTECHNICAL, GEOLOGIC AND GEOENVIRONMENTAL REPORTS SHOULD NOT BE INTERCHANGED**

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually relate any environmental findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding a specific project.

**BIOLOGICAL POLLUTANTS**

GeoEngineers’ Scope of Work specifically excludes the investigation, detection, prevention or assessment of the presence of Biological Pollutants. Accordingly, this report does not include any interpretations, recommendations, findings, or conclusions regarding the detecting, assessing, preventing or abating of Biological Pollutants and no conclusions or inferences should be drawn regarding Biological Pollutants, as they may relate to this project. The term “Biological Pollutants” includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and/or any of their byproducts.